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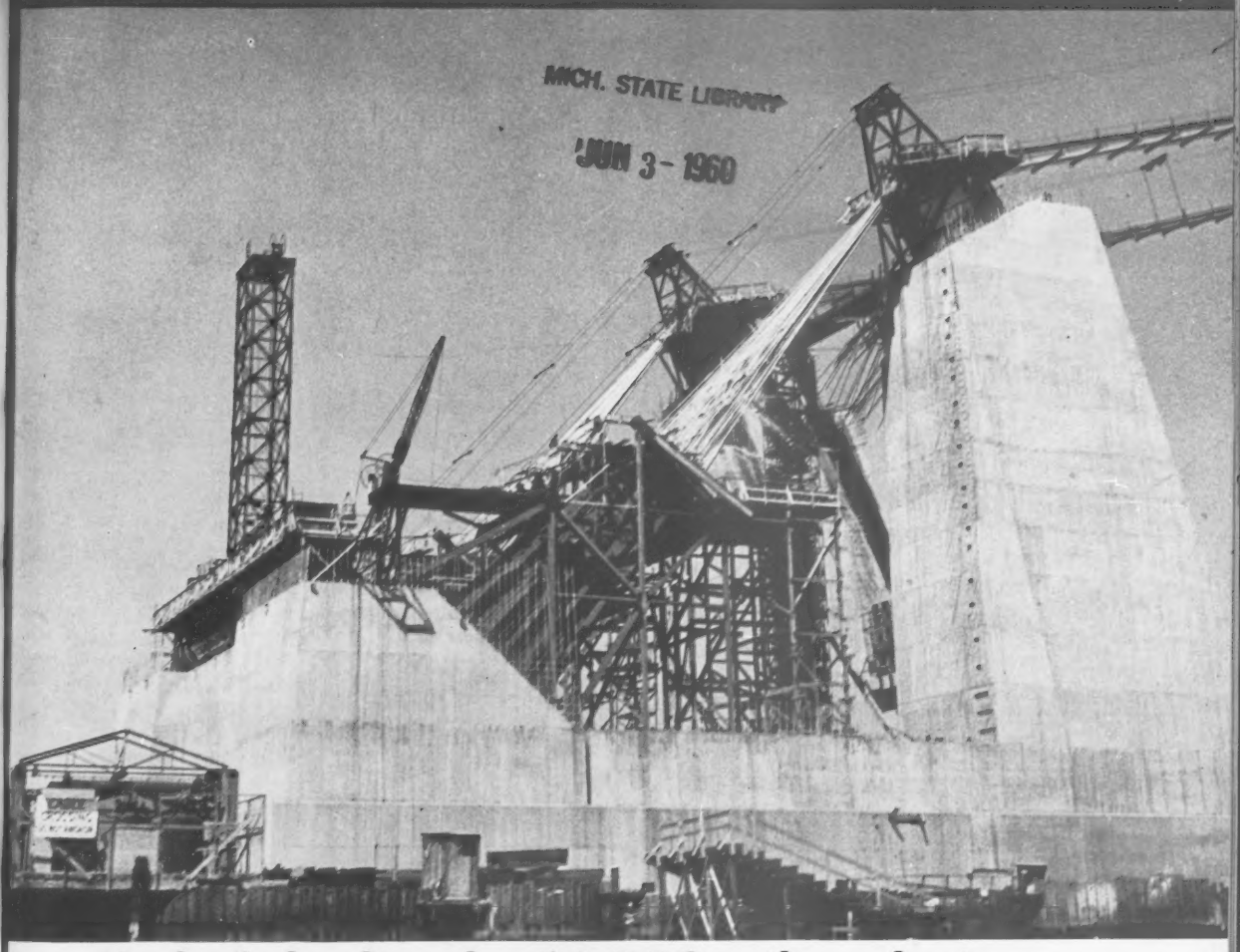

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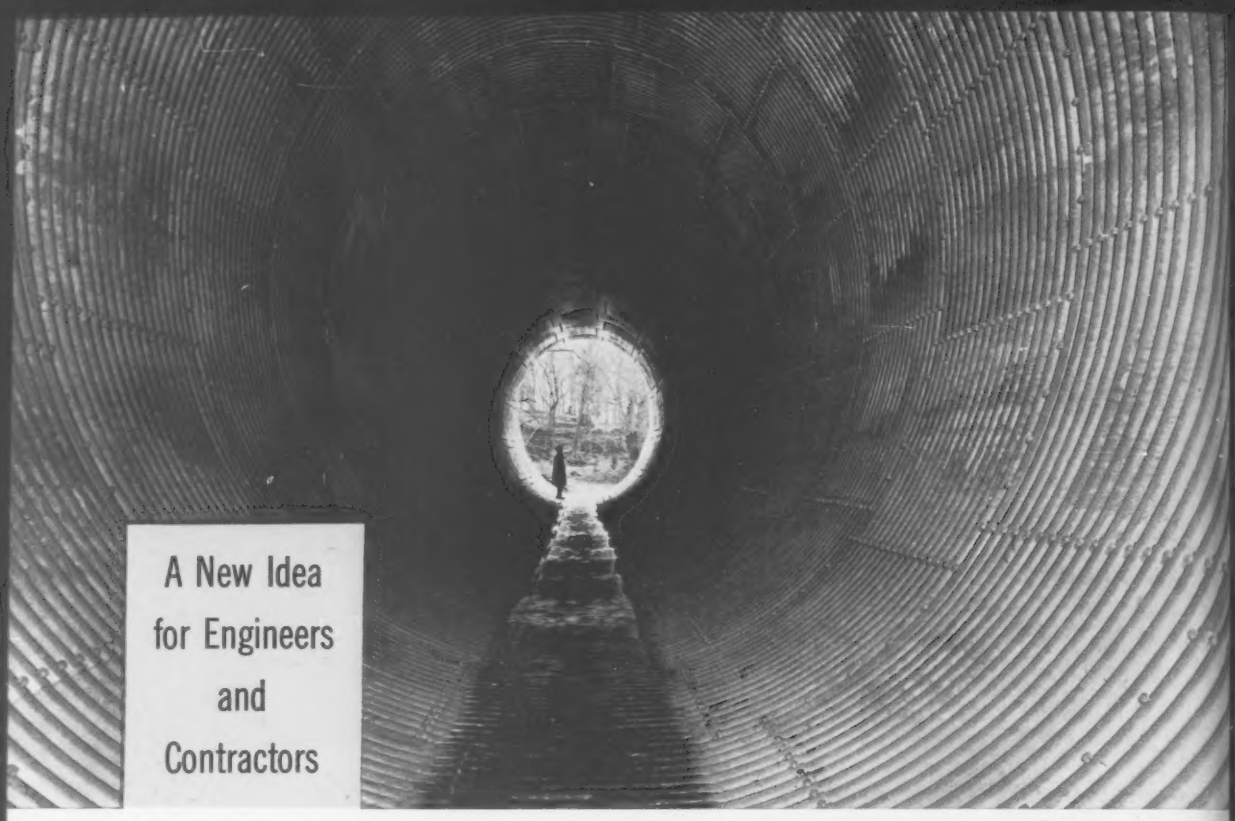

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New steels are born at Armco

ARMCO DRAINAGE & METAL PRODUCTS, INC.
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- ☐ Send "The Corrugated Metal Conduit as a Compression Ring."
- ☐ Send catalog.
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GET POSITIVE PENETRATION AT CUTTING EDGE

The new, all-hydraulic TS-360 is the only motor scraper in the 30-yd class with double-acting bowl jacks that provide 2-way power for faster loading, more cutting control.

The TS-360's exclusive hydraulic down pressure penetrates quickly into the toughest-loading materials. Penetrating force like this—along with Allis-Chalmers original low, wide bowl—gives you fast, heaped loads every pass.

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Positive penetration is only one reason you'll get top performance on any size job. *Two-stage steering—forced ejection and highest apron lift—90° steer and* KON-TORK *differential* are earth-moving advantages you cannot afford to overlook.

Put this new 340-hp TS-360 to work for you. Move more dirt per dollar invested than ever before. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

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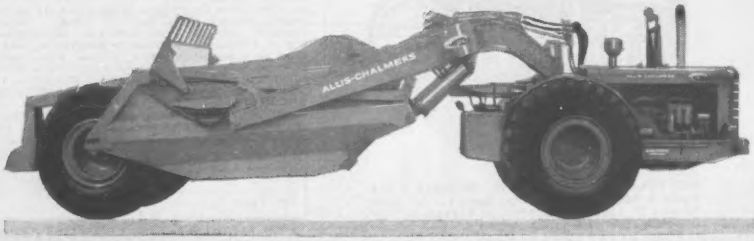

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Richmond Strand Deflection Inserts for prestressed concrete beams and girders

Included in Richmond's complete line of inserts and accessories for prestressed concrete are a variety of strand deflecting devices, designed to accommodate ¾", 1" and 1¼" bolts or eye bolts to suit your project and match your pretensioning bench.

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For information about Richmond-engineered Strand Deflection Inserts for prestressed beams and girders contact us or our distributors: Intercontinental Equipment Co., Inc., 120 Broadway, New York 5, N. Y....and if you have a specific concreting problem, ask our Technical Department about it—they can help you. Write to:—

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THE STORY BEHIND THIS SEAL

This is more than just the Seal of Approval of the Steel Joist Institute. It is the symbol of a 32-year-old dedication to the welfare and progress of an important segment of the design and construction industries.

What is the Steel Joist Institute?

It is a voluntary association, organized in 1928, of open web steel joist manufacturers. Membership is available to any producer of open web steel joists who elects to manufacture joists in accordance with the standards and practices as adopted by the Institute.

What is its purpose?

The Steel Joist Institute is a nonprofit organization made up of manufacturers actively engaged in the fabrication and distribution of open web steel joists. It was organized to place the industry on a sound engineering basis. Its objectives are to establish methods of design and construction for open web steel joists, to provide test and research data for public dissemination, to assist in the development of appropriate building code regulations, and to publish information relative to the proper use of steel joists in the interest of safety and the public welfare.

What are its accomplishments?

The Institute has made substantial practical contributions to the building construction industry. It has developed and published a comprehensive manual of standard specifications, load tables, and technical bulletins to assist the architect, engineer, and contractor; conducted research and testing of open web steel joists, bridging and cantilever members; initiated a thorough, effective quality verification program for "S" Series joists and a recommended Code of Standard Practice applicable to steel joists.

Inquiries concerning the Steel Joist Institute should be sent to the Managing Director, Steel Joist Institute.

STEEL JOIST INSTITUTE

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"WE NEED HIGHEST QUALITY MATS, WE

Giesen & Latson Constr. Co., Austin Texas, use Barber-Greene 879-B and 873 finishers to pave closely checked jobs in state capitol

Finishing asphalt paving in Austin, Texas, is the same as in any state capitol—a "fishbowl" operation with all the top state highway department brass viewing results.

But these working conditions are just fine with E. W. Giesen, partner in Austin's leading paving firm—Giesen & Latson Constr. Co. He states: "We know we need highest quality mats because of close scrutiny given our jobs. We get mats that pass every inspection from both our Barber-Greene 879-B and smaller 873 finishers.

"Furthermore," he adds, "our 879-A finisher paved 300,000 tons in three years and set a maintenance record that influenced our buying two new

PARTNER E. W. GIESEN, right, and Dan Dyes, the firm's supt. of asphalt hot mix construction, both like the mat quality, low maintenance, and flexibility of operations they get with the Barber-Greene 879-B and 873 finishers.

TEXAS "JACK RABBIT." The firm's 873 Barber-Greene finisher really gets around, handling the small, scattered jobs and working teamed with the 879-B on big jobs. The unit paves on tracks, travels on rubber tires.

Choose from Barber-Greene's largest selection of 17 continuous and batch-type mix plants to complete the most profitable paving package available.

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TS, WE GET 'EM WITH BARBER-GREENES"

Barber-Greenes."

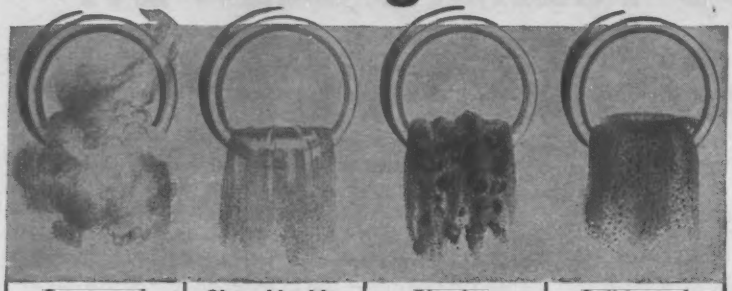
Use Side-by-Side Setup—This Austin firm's contracts run about 40% city work and 60% highway jobs. Wherever possible on highway jobs with interchanges, Giesen & Latson work both finishers side-by-side. This arrangement gives them a wide range of paving width combinations that speed contracts while maintaining top quality standards.

Below, the 879-B finisher is shown paving three 12′ lanes on Interstate Highway 35 north of Austin. Lifts consist of a 1½″ base course on Texas Type C mix and a 1″ surface course of Type D. Operating consistently at 50 fpm, the 879-B handles 20-ton trucks. Both Barber-Greenes easily handle all the varying mat widths required. Extensions and cut-off shoes give width ranges from 8-14′ on the 879-B machine and from 6-12′ on the 873.

5 Big Buys in No. 1 Finisher Line—Before you buy your finisher, check your Barber-Greene Distributor and discover why his machines were No. 1 choice of 82% of the asphalt paving contractors in a 1960 nation-wide poll. This great line includes the 879-B and 873 shown here and: two giant heavy duty, high speed machines—the crawler-mounted SA-60 and the pneumatic-tired SB-60; and the SJ-50 Road Widener and Shoulder Paver, only machine that handles all types of widening and shoulder paving with all materials, including concrete.

"POOL TABLE" SURFACE describes this mat being finished by the Giesen & Latson 879-B Barber-Greene finisher on Interstate Highway 35 north of Austin, Texas. And the 873 lays the same quality mat when working side-by-side with this machine.

Waste Handling...*Presolved!*



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Waste and toxic gases • vapor recovery and recondensation • vacuum distillation • gas blowing • refrigerants • low vacuum	Surface drainage • tank car unloading • process wastes • viscous liquids • acids: sulphuric, hydrochloric, acetic • spent caustic brine • cyanides • tank farm drainage	Liquids with ashes, fly ash, cinders, coal particles, catalysts, coke, sand, glass • tar • paint • pigments • adhesives • abrasives • molten sulphur • cane juice • black liquor	Heavy, bulky, dry materials • acid slurries • sand • ashes • powdered coal • cracking catalysts • sludges • pulp
Air Cooled Units	Submersible Pumps	Series 8000	Transporter
Fan Cooled Units	Series 3000	Series 6000	Expelsor®
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		Pneu-Pumps	

Right now you may be puzzling over a particular waste handling job—which type of pump to use and whether pneumatic or electric; corrosion problems; reclaimable materials; precautions for hazardous wastes; and a dozen other considerations. **Handling wastes is tricky, takes a know-how all its own.**

For 61 years, Yeomans has been solving waste and drainage problems throughout industry. Once in a while, Yeomans engineers bump into a new twist, but usually the job is one that has been worked out time and again.

Chances are, your own problem is already solved. Why not contact your Yeomans engineer-representative and find out. He brings you a wealth of experience, plus types of equipment unique in the field. If you don't already know him, look in Sweet's Catalog or in the yellow pages of the telephone book under "Pumps."

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Reader Comment

Engineers, Keep Up!

SIR—I believe that your editorial "To Raise Research Funds" (ENR March 24, p. 344) discusses very vital problems in the profession of civil engineering.

Your editorial states that "the more we learn, the more we become aware of deficiencies in our knowledge, and the more effort we must make to correct them."

Throughout the country, many technical and research organizations do very important work to widen our knowledge and push back the frontiers of the unknown. Such work requires more men and more funds.

However, this work is only half understood by many civil engineers. There are too many professional engineers who do not read or follow the reports prepared by our researchers. A very common excuse is that the reports are too "academic." While it is true that understanding these reports requires some knowledge of advanced mathematics and science, it is also true that engineers without such knowledge can be replaced by mechanical computers.

ERNEST KALVE
Chicago, Ill.

Two Lanes Too Little?

SIR—I should appreciate the opportunity of pointing out the error of your editorial, "Two Lanes Are Too Little" (ENR April 28, p. 116).

You may be interested to know that the two-lane facility planned at Newburgh is designed to serve the 20-to-30 year needs of the area, and that the state intends to erect a second two-lane span alongside the original crossing when traffic warrants. Indeed, right-of-way is being acquired with that eventual expansion in mind.

It should also be noted that the question of using federal aid for this project is much more complex than your editorial indicated. One of the principal reasons federal aid was rejected was that it would have required a system of financing that would have imposed toll increases on all New York State Bridge Authority Crossings. Such increases would have resulted in vigorous opposition to any Newburgh crossing by other Hudson River communities.

This Department rejects your contention that because traffic requirements

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HOW Rock-Ribbed Payhauler® GIVES YOU new load-speeding capacity!

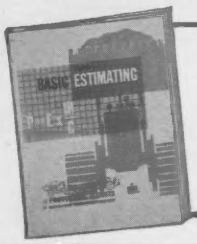
Of all rear-dumps in their size classes, only the International 65 and 95 Payhauler models give you the weight-shedding, strength-multiplying, rock-ribbed corrugated bodies! You trade 2½ tons of power-wasting dead weight for 3 bonus tons of capacity in the new 95 Payhauler!

Only the 65 and 95 Payhauler models have the power "plus" of the direct-start, high-torque, 4-cycle 6-cylinder International "817" Diesel engine! The "95" is powered by the 375-hp DT-817 turbocharged Diesel; the "65" has the same basic, high-output power plant: the naturally-aspirated 250-hp D-817!

Choose the "95" with power-shift torque-converter, or 9-speed air-shift transmission. The "65" comes with 10-speed constant-mesh transmission. Both models have the load-speeding safety of reserve-area braking and "one-hand," road-holding power steering! Above, it's the "65" shown storming up a 16% grade with 19-ton payload. Compare how Payhauler gradeability speeds the cycle over other haulers!

In minimum shovel time you heap-load the big-target Payhauler body. Rugged corrugations absorb rock-shock—give high resistance to wear and distortion from abrasion and impact! Torque - cushioning planetary-type axles let you apply full power to start and haul full loads!

Add up the capacity-boosting advantages of Payhauler power-to-payload *punch*—super-speedy Payhauler loading, hauling and dumping. See how either the 19-ton "65" or 27-ton "95" can give you gear-faster climb-outs—and haul up to 14% faster than other rear-dumps! See your International Construction Equipment Distributor for a demonstration!



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International® Construction Equipment

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for over 7 straight years
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by far in sales of diesel trucks

Multi-million dollar construction project involving runway extensions on the Namao Airport near Edmonton, Alberta, found Macks working 'round the clock to beat winter weather. Dependable, trouble-free performance is expected and received from Mack trucks no matter what the job.

Mack performance pays off on everything from

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On construction jobs of all kinds, experienced contractors are Mack boosters. Most trucks just can't provide the stamina and economy needed for month-in, month-out heavy-duty service under severe operating conditions.

Experienced operators continually prove that solving the problem of high costs calls for quality equipment. Mack quality begins with Mack-built major components—front and rear axles, engines, frames, transmissions and brakes—which are made to the highest standards in the industry. It appears in special Mack features like the exclusive Balanced Bogie with Power Divider for positive traction over any terrain . . . and extends to Mack cabs, which offer the utmost in driver vision and comfort, easy access to all working parts, and minimum upkeep requirements.

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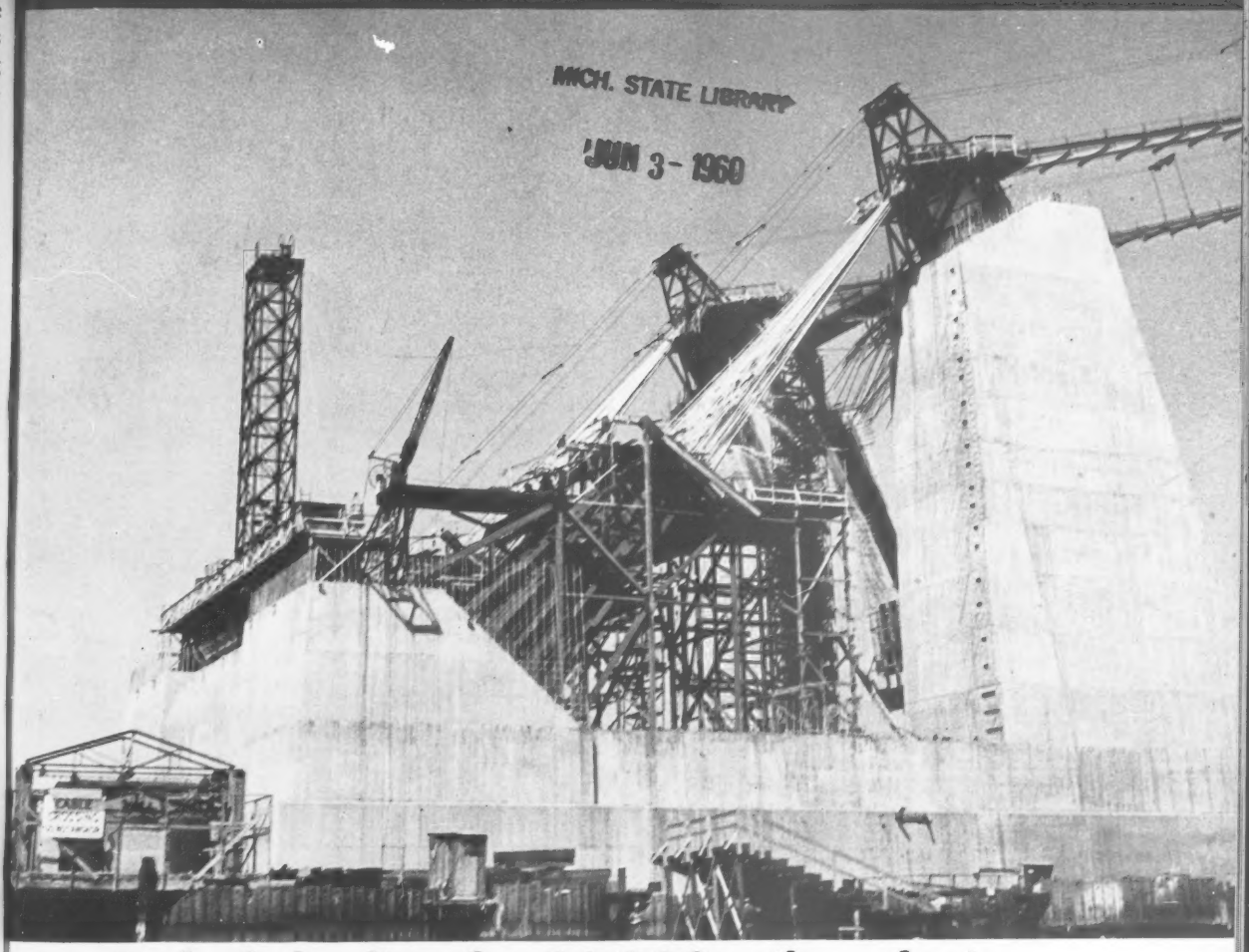

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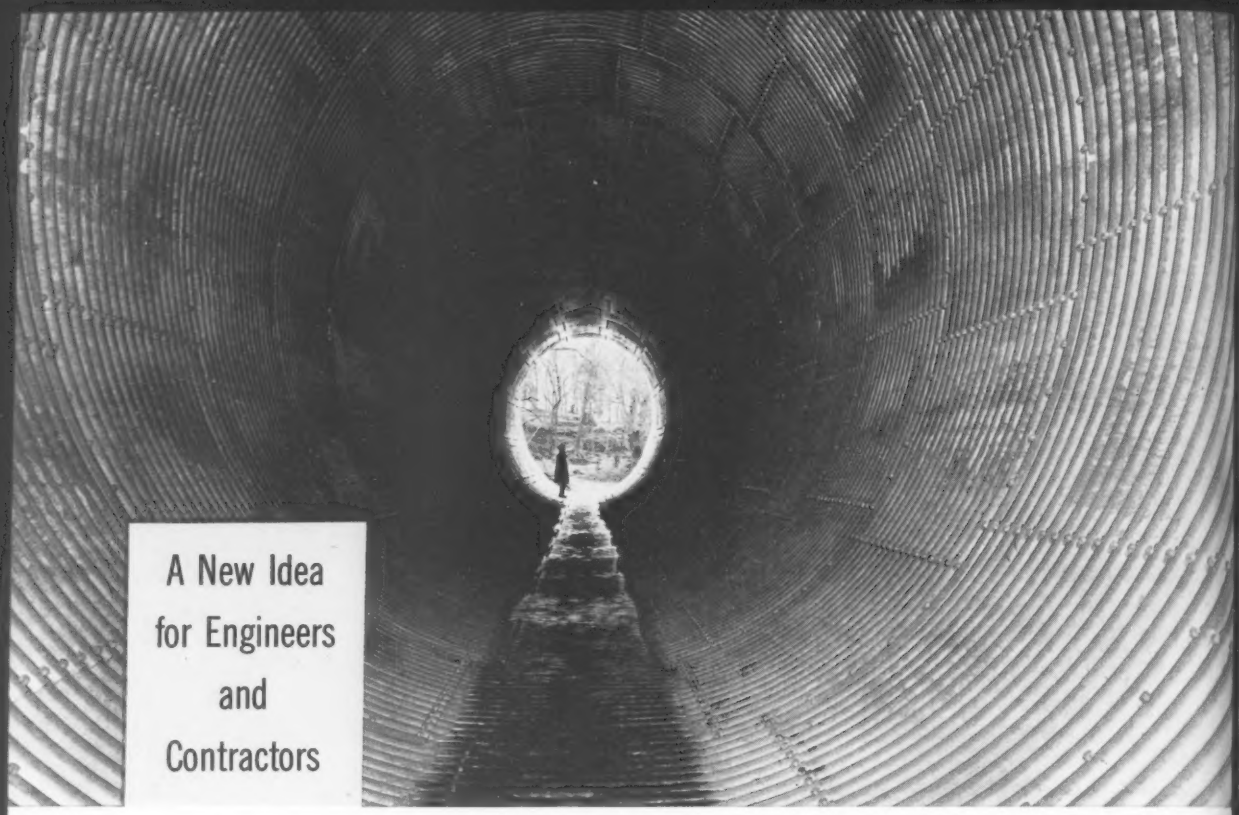

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New steels are born at Armco

ARMCO DRAINAGE & METAL PRODUCTS, INC.
6980 Curtis Street, Middletown, Ohio

- ☐ Send "The Corrugated Metal Conduit as a Compression Ring."
- ☐ Send catalog.
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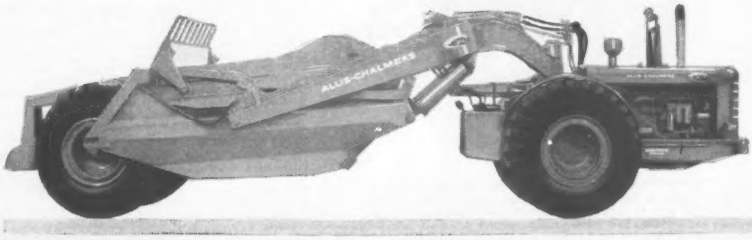

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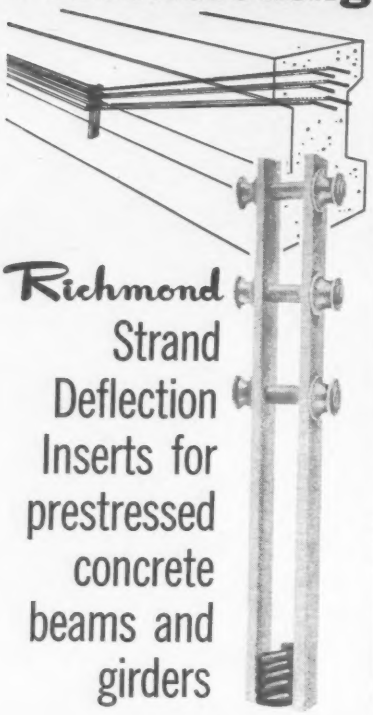

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Richmond Strand Deflectors are manufactured for single, double and triple lines of strands and are available with or without keepers or rollers.

There is a standard line of Richmond Strand Deflection Inserts but, since requirements for deflecting devices vary widely, special units can be manufactured on request to suit individual needs.

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THE STORY BEHIND THIS SEAL

This is more than just the Seal of Approval of the Steel Joist Institute. It is the symbol of a 32-year-old dedication to the welfare and progress of an important segment of the design and construction industries.

What is the Steel Joist Institute?

It is a voluntary association, organized in 1928, of open web steel joist manufacturers. Membership is available to any producer of open web steel joists who elects to manufacture joists in accordance with the standards and practices as adopted by the Institute.

What is its purpose?

The Steel Joist Institute is a nonprofit organization made up of manufacturers actively engaged in the fabrication and distribution of open web steel joists. It was organized to place the industry on a sound engineering basis. Its objectives are to establish methods of design and construction for open web steel joists, to provide test and research data for public dissemination, to assist in the development of appropriate building code regulations, and to publish information relative to the proper use of steel joists in the interest of safety and the public welfare.

What are its accomplishments?

The Institute has made substantial practical contributions to the building construction industry. It has developed and published a comprehensive manual of standard specifications, load tables, and technical bulletins to assist the architect, engineer, and contractor; conducted research and testing of open web steel joists, bridging and cantilever members; initiated a thorough, effective quality verification program for "S" Series joists and a recommended Code of Standard Practice applicable to steel joists.

Inquiries concerning the Steel Joist Institute should be sent to the Managing Director, Steel Joist Institute.

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"WE NEED HIGHEST QUALITY MATS, W

Giesen & Latson Constr. Co., Austin Texas, use Barber-Greene 879-B and 873 finishers to pave closely checked jobs in state capitol

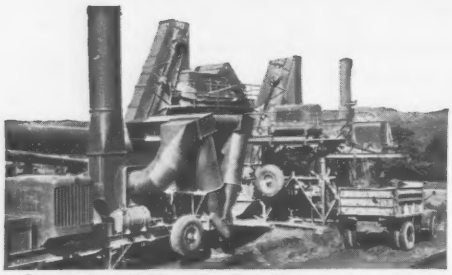
Finishing asphalt paving in Austin, Texas, is the same as in any state capitol—a "fishbowl" operation with all the top state highway department brass viewing results.

But these working conditions are just fine with E. W. Giesen, partner in Austin's leading paving firm—Giesen & Latson Constr. Co. He states: "We know we need highest quality mats because of close scrutiny given our jobs. We get mats that pass every inspection from both our Barber-Greene 879-B and smaller 873 finishers.

"Furthermore," he adds, "our 879-A finisher paved 300,000 tons in three years and set a maintenance record that influenced our buying two new

PARTNER E. W. GIESEN, right, and Dan Dyes, the firm's supt. of asphalt hot mix construction, both like the mat quality, low maintenance, and flexibility of operations they get with the Barber-Greene 879-B and 873 finishers.

TEXAS "JACK RABBIT." The firm's 873 Barber-Greene finisher really gets around, handling the small, scattered jobs and working teamed with the 879-B on big jobs. The unit paves on tracks, travels on rubber tires.



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TS, WE GET 'EM WITH BARBER-GREENES"

Barber-Greenes."

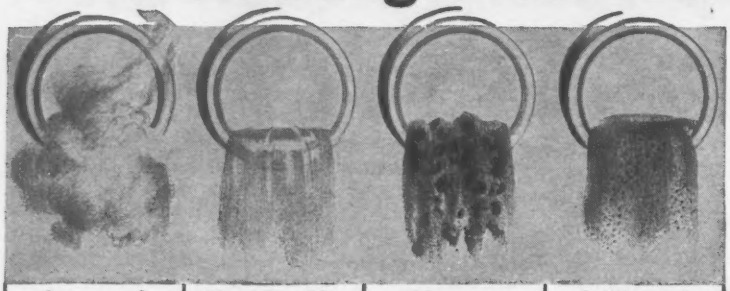
Use Side-by-Side Setup—This Austin firm's contracts run about 40% city work and 60% highway jobs. Wherever possible on highway jobs with interchanges, Giesen & Latson work both finishers side-by-side. This arrangement gives them a wide range of paving width combinations that speed contracts while maintaining top quality standards.

Below, the 879-B finisher is shown paving three 12′ lanes on Interstate Highway 35 north of Austin. Lifts consist of a 1½″ base course on Texas Type C mix and a 1″ surface course of Type D. Operating consistently at 50 fpm, the 879-B handles 20-ton trucks. Both Barber-Greenes easily handle all the varying mat widths required. Extensions and cut-off shoes give width ranges from 8-14′ on the 879-B machine and from 6-12′ on the 873.

5 Big Buys in No. 1 Finisher Line—Before you buy your finisher, check your Barber-Greene Distributor and discover why his machines were No. 1 choice of 82% of the asphalt paving contractors in a 1960 nation-wide poll. This great line includes the 879-B and 873 shown here and: two giant heavy duty, high speed machines—the crawler-mounted SA-60 and the pneumatic-tired SB-60; and the SJ-50 Road Widener and Shoulder Paver, only machine that handles all types of widening and shoulder paving with all materials, including concrete.

"POOL TABLE" SURFACE describes this mat being finished by the Giesen & Latson 879-B Barber-Greene finisher on Interstate Highway 35 north of Austin, Texas. And the 873 lays the same quality mat when working side-by-side with this machine.

Waste Handling...*Presolved!*



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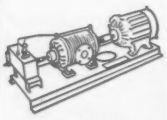
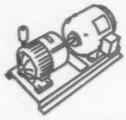
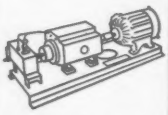


Air Cooled Units



Fan Cooled Units



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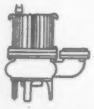

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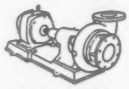

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Reader Comment

Engineers, Keep Up!

SIR—I believe that your editorial "To Raise Research Funds" (ENR March 24, p. 344) discusses very vital problems in the profession of civil engineering.

Your editorial states that "the more we learn, the more we become aware of deficiencies in our knowledge, and the more effort we must make to correct them."

Throughout the country, many technical and research organizations do very important work to widen our knowledge and push back the frontiers of the unknown. Such work requires more men and more funds.

However, this work is only half understood by many civil engineers. There are too many professional engineers who do not read or follow the reports prepared by our researchers. A very common excuse is that the reports are too "academic." While it is true that understanding these reports requires some knowledge of advanced mathematics and science, it is also true that engineers without such knowledge can be replaced by mechanical computers.

ERNEST KALVE
Chicago, Ill.

Two Lanes Too Little?

SIR—I should appreciate the opportunity of pointing out the error of your editorial, "Two Lanes Are Too Little" (ENR April 28, p. 116).

You may be interested to know that the two-lane facility planned at Newburgh is designed to serve the 20-to-30 year needs of the area, and that the state intends to erect a second two-lane span alongside the original crossing when traffic warrants. Indeed, right-of-way is being acquired with that eventual expansion in mind.

It should also be noted that the question of using federal aid for this project is much more complex than your editorial indicated. One of the principal reasons federal aid was rejected was that it would have required a system of financing that would have imposed toll increases on all New York State Bridge Authority Crossings. Such increases would have resulted in vigorous opposition to any Newburgh crossing by other Hudson River communities.

This Department rejects your contention that because traffic requirements

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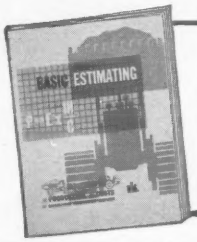

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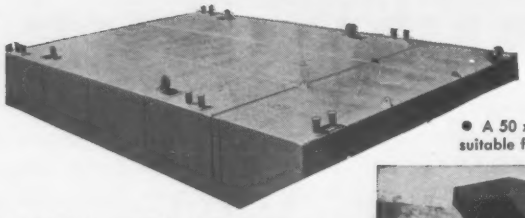

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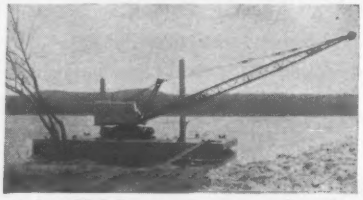

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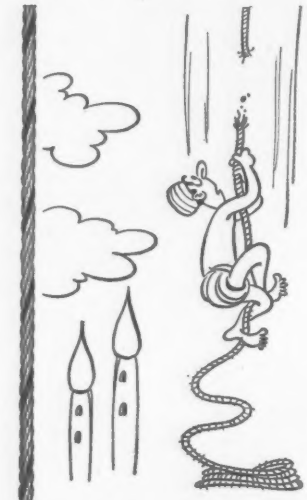

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. . . Reader Comment

do not sustain the need for a four-lane span, communities requiring a bridge facility should be denied a two-lane crossing. To follow your approach would be extravagant; to do nothing would be a betrayal of public responsibility.

NICHOLAS D. CAMMERO
Director, Public Relations
New York Department of Public Works
Albany, N. Y.

SIR—As a regular reader of your weekly magazine, I always take pleasure in your editorials. The one "Two Lanes Are Too Little" was truly a piece of fine, lucid reporting.

It is unfortunate that state governments still persist in penalizing the public by yielding to tax inspired economic pressures.

Ultimately, the people pay anyway, since an inadequate bridge or public work has to be increased or augmented sooner or later.

FRANK MEIER
Project Manager
Beacon Construction Co.
Boston, Mass.

Automatic Snow-Removal

SIR—Severe weather conditions during the past winter over much of the country imposed unusually heavy work loads on highway agencies charged with the responsibility of maintaining these facilities in a safe condition. Even with extreme effort and the expenditure of large sums of money, many agencies were unable to keep their highways open and in a safe condition.

On many occasions, the writer has made inquiry relative to mechanical, chemical or electrical means of keeping the roads dry and safe during all kinds of weather.

In each instance, I have been informed that the cost of such equipment would be prohibitive, and therefore out of the question.

If main arteries of traffic are to remain open all year, there must be an approach, other than merely saying the bill is too high and merely letting it go at that.

Many of these highways are transcontinental. They carry not only family cars, but busses and trucks hauling heavy and important freight. Long delays are costly.

All state highway commissioners and other interested parties should study this topic to see what can be done to remedy a bad and most dangerous condition.

Since men and equipment, cinders and salt are no longer able to cope with the problem, some type of automatic system, which will begin to operate the instant the weather changes from dry to wet or snow, should be tried out.

ARNOLD A. ROSENFELD
McKeesport, Pa.

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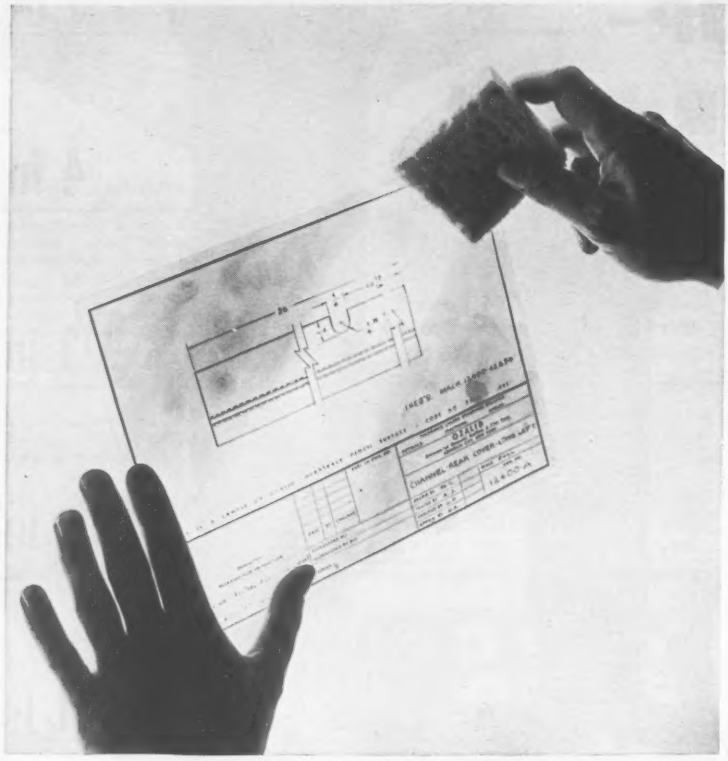

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New washable, scrubbable Duratrace® gives you indestructible masters you can sponge new!

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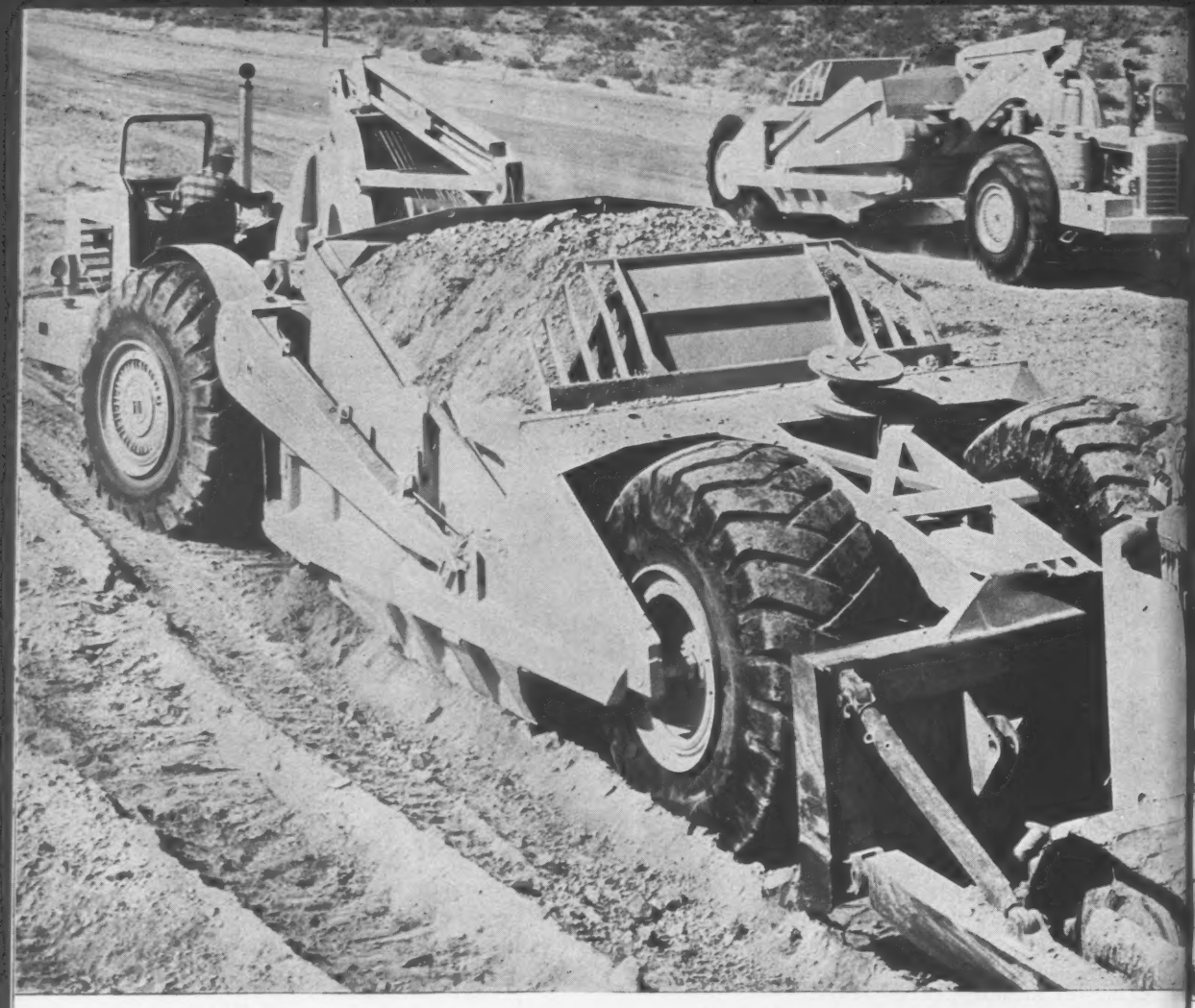

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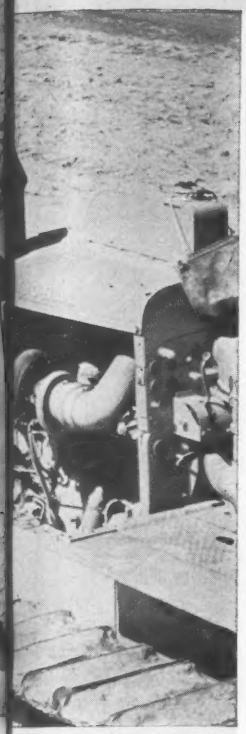

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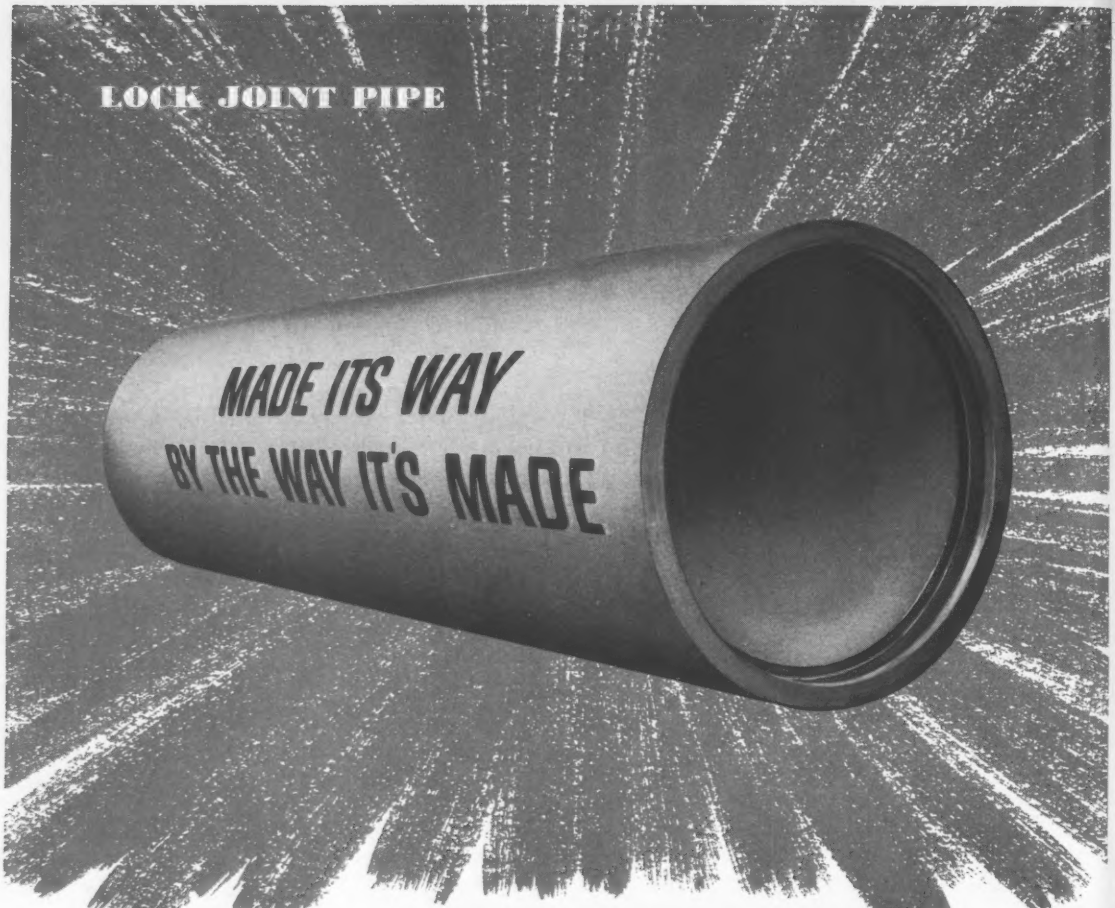

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THE CONSTRUCTION WEEK

MASS HOUSING MAKES HISTORY—Mass housing contracts broke all weekly records last week at $387.3 million. Two projects were responsible for the big lead, Electric City, U. S. A. (see p. 24) and a $96-million cooperative apartment a butchers union will build over the tracks of the New York Central Railroad.

A STRESS ON REBARS—New York engineers are reportedly preparing plans for a bridge incorporating high-strength reinforcing steel designed for stresses of 30,000 psi or more, instead of the usual 18,000 or 20,000 psi.

BATTLE BREWING IN BOSTON—Boston consultants have reached the end of their patience with the way big state contracts have been flowing to out-of-state firms (ENR May 26, p. 21). They say they can't even get in to talk it over with Gov. Foster Furcolo. Look for the grumbling to jell into open verbal warfare when the directors of the state's Society of Professional Engineers meet next month. Society members plan to compile a list of cases they consider particularly fishy.

CANAL BRIDGE HITS A SNAG—Foundation work for the Panama Canal bridge (ENR Mar. 10, p. 22) is reported to be 25% behind schedule because of cofferdam troubles. Failure of an open cofferdam is attributed to underwater conditions different from those anticipated. New cofferdam designs are awaiting approval.

WHO'S AFRAID OF RUST?—Structural steel in several buildings planned for Moline, Ill., will be exposed and unpainted. The structural engineer is drawing plans for a high-strength, low-alloy steel. Exposure tests at the site indicate negligible rusting after the first year. First year's rust is gray, not red.

BUILD A BETTER ICE CUBE—A third freezing process for conversion of sea water is in the running for the Interior Department's East Coast demonstration desalter. Struthers Wells, Warren, Pa., and Scientific Design Co., New York City, say their process produces large ice crystals that are more easily washed free of salt. Blaw-Knox Co. and Carrier Corp., each building 35,000-gpd pilot units on the East Coast, may have company if Office of Saline Water approves the new process.

RAISING THE RENT—Last week New York City backed its campaign against the traffic-blocking encumbrances of construction with a whole wrecking crew (see p. 23). Now it wants to up the fine for violations to $100 a day from the present $10, which officials consider "a rental any builder would happily pay for the use of city streets."

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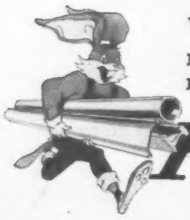

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WASHINGTON OBSERVER

- Campaign fever loosens purse strings
- Expanded highway research coming

● **Shifting political pressures are changing the outlook for legislation affecting construction.** Some issues look sharper to politicians as convention time and election day draw nearer. Vice President Nixon is using his leverage on President Eisenhower and GOP leaders in Congress to soften some of the Republican opposition to programs that come under the heading of "spending issues."

For instance, last week's maneuvering on a school construction bill (see p. 23) was specifically the result of a Nixon attempt to get some credit for a more liberal position than the one Eisenhower has held to for so long.

On the issue of aiding depressed areas, the Administration is going along with a measure to provide $75 million for new plants and modernization of old ones, and $100 million for community facilities. The Administration's new bill still falls short of what the Democrats want, and the outlook is dim for any legislation this year.

Mr. Nixon's influence is seen in other areas—including medical help for the aged, higher minimum wage and the like.

Here's the outlook for other construction legislation as Congress moves into its last month:

Highway finances won't get the benefit of the half-cent per gallon gasoline tax increase Eisenhower asked.

Housing is in a snarl, but the Senate may take lead for Fannie Mae in passing new aid for urban renewal, GI housing, college housing, and the like. The House has already approved extra $1 billion for Fannie Mae. An omnibus bill will be approved by Congress, but final provisions are still up in the air.

Taft-Hartley change to allow on-site picketing looks more and more unlikely.

Defense spending is bound to be boosted and construction of missile bases might be speeded some.

● **A big expansion of highway research seems certain** now that the American Association of State Highway Officials knows where the research is needed and how much can profitably be spent.

The Highway Research Board last week turned in the results of a two-year study by a special committee of five—three state highway officials, one from the Bureau of Public Roads, one university scientist. They recommended that present highway research of around $17.8 million a year be increased by 38%; and then specified 19 kinds of problems where additional research is most needed. Over the next four or five years, for instance, the committee recommended spending $10 million for research on soils and aggregates, $5 million to translate the AASHO road test results to fit conditions in other states, $1 million each for lighting of freeways, passenger transportation in urban areas, snow and ice removal or treatment.

Officials hope that the recommendations will be put into effect soon after the AASHO executive committee meeting in June. With wide agreement on the need, the guessing is that no real opposition exists to adoption of most or all of the program. Sources of money for research now under way—state, federal, and private—are figured to be sufficient to support the added programs.

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Probe Spurs Highway Reforms

- **The Blatnik committee findings have forced road officials to take a new look at some important administrative deficiencies.**
- **BPR has already tightened its project controls; and AASHO studies now under way will probably result in new procedures.**

The Bureau of Public Roads and state highway officials are busily tightening nuts and bolts in their administrative machinery.

They are well aware that the Blatnik committee is filing away fodder for hearings perhaps just as embarrassing as those that uncovered the irregularities on the Skelly Bypass in Tulsa, Okla. (ENR May 12, p. 21).

But they are determined to correct whatever irregularities remain and to work out procedures to insure against their recurrence.

An extensive reshaping of construction contract supervision began last week when key members of the American Association of State Highway Officials met with BPR Commissioner Ellis L. Armstrong and Deputy Commissioner Frank C. Turner.

That was the third meeting of road men in recent weeks—all of them spurred by the scandals, all of them aimed at heading off new ones.

The first was held early this month at LaSalle, Ill. There AASHO chairman David H. Stevens of Maine set up a special committee on project procedures charged with setting guidelines for insuring effective supervision of all phases of construction in road projects (ENR May 19, p. 31).

The committee is working out a system for cross checking such things as sampling and testing results, materials quantity and quality and workmanship. Five subcommittees have been organized to go into such subjects as paving type determination and documentation, grading and minor structures, flexible pavements, rigid pavements and channels of project supervision.

Another AASHO committee is checking into current procedures for handling right-of-way purchases.

A first draft of proposals from these AASHO task forces should be ready by the end of this month; and a final version will be ready in time for the annual AASHO meeting in Detroit in December.

If new procedures are formally adopted by the full AASHO membership, BPR may well make them a part of all federal-aid roadbuilding procedures, just as AASHO construction standards now form the basis of BPR regulations in that area.

Meanwhile, with the Blatnik investigators breathing down their necks, state highway departments aren't waiting for these new regulations to put their own houses in order. Many have already begun overhauling their construction administration practices.

From states like Arizona, Maine, Texas, Missouri, Oregon, Virginia and others come reports of one- and two-day skull sessions between road officials and their engineers on how to close loopholes.

Reviews are under way in almost all states to make sure that inspection systems which look good on paper are actually working as planned.

Typical of the sloppy administration they're trying to get at is the deterioration of the spot-checking system in one state. There, the central laboratory, which was supposed to make the spot checks, did not actually go into a project unless specifically requested to do so. Over one 10-year span the laboratory received not a single request.

As far as BPR is concerned, it just doesn't have the manpower to do the inspection job necessary for the approximately 10,000 highway projects under construction.

It has 500 area engineers spread across the country. BPR says it needs twice that number.

BPR's workload has tripled since 1956, when Congress voted the $50-billion federal-aid highway program. Personnel to handle the program has increased only 20%. BPR requested 150 more men, mainly area engineers, for the coming year. That was whittled to 100 in the budget request, then snipped to 50 by Congress.

That is not to say that BPR offers its lack of personnel as a blanket excuse for inadequate inspection. It sought, three days before the Blatnik hearings began, to tighten federal control of the roadbuilding program with this three-point edict to its field offices:

- In addition to the presently prescribed responsibility of the division engineer or his representative to inspect material test reports during his visits to projects, he will report for the bureau's permanent project records the findings from such reviews and any actions taken regarding the materials and workmanship being incorporated into the job. Payments will be held back on states that don't have on file, when the BPR representative makes an inspection, material test reports and other reports that show a project is being constructed according to approved plans and specifications.
- Bureau inspectors must submit in writing the results of thickness, lineal, and other measurements taken during the inspection of a project. The BPR inspector will select random points for samples to be taken on project work. These samples must then be sent by the project engineer to the state central laboratory for testing with results reported to the Bureau of Public Roads' division engineer. Location of the points where samples have been ordered will be included in the inspector's reports.
- Beginning this week, before the final acceptance of a project, states must take samples on a project as selected by the bureau's division engineer. A bureau representative will observe both the sample taking and testing. States must also certify that the project meets all governing plans and specifications, including workmanship and materials, before the bureau will pay for the project.

Quakes shook structures in Chile's cities, but . . .

Slides, Waves Do Major Damage

The earthquake tremors, tidal waves and landslides that wracked Chile's south-central provinces all through last week have piled up an awesome toll of destruction.

Initial reports from ENR's correspondent in Chile indicate that a large portion of the damage to modern, framed structures has been caused by landslides and, along the coast, by wave action coming after the earthquake tremors, rather than by the tremors themselves.

Tremors did account for most of the destruction in older masonry, wall-bearing buildings.

Main force of the earthquakes was concentrated in a 500-mile-long strip running south from the Concepcion area, which is about 250 miles south of the capital city of Santiago.

The first series of severe shocks was estimated at 8.25 to 8.5 on the Richter scale of 10, according to the U. S. Coast and Geodetic Survey, making the tremors comparable to the San Francisco earthquake of 1906. Later in the week, tremors topped out on the scale between 7 and 8.

By the weekend, 3,000 persons were reported dead or missing and over 2 million—a quarter of the country's population—were estimated to be homeless.

Detailed estimates of how well modern, framed structures survived were delayed since all government forces were still engaged in rescue work and most engineers were in the field on salvage and damage assessment missions.

The seaport of Puerto Montt, 725 miles by road south of Santiago, took the heaviest direct beating in the series of earthquakes. The nearly completed nine-story, reinforced concrete Hotel Turismo—scheduled to open this September—was cracked open from its roof down through three top floors in the first major tremors. Later, the building was so severely damaged by landslides, ENR's reporter said, that the entire structure will be dynamited to remove the remaining hazard. Port installations in the city have been nearly wiped out by tidal wave action.

Many two- and three-story concrete frame buildings apparently withstood the shocks although exterior walls were ripped off in most cases.

At Valdivia, 80 miles farther north, a new, eight-story reinforced concrete hospital collapsed in the same series of tremors.

Concepcion suffered heavy damage but escaped the destruction farther to the south. The naval base at Talchuano, nine miles north of Concepcion, was "severely damaged," ENR's correspondent reported. Damage details are not complete.

Several spans of a major highway link, the 1,953-ft-long bridge over the Bio Bio River south of Concepcion, dropped when the piers collapsed.

Concepcion has probably the most "complete" earthquake history in Chile. Founded in 1550, it was destroyed by quakes in 1570, 1730 and 1751 and was almost completely rebuilt after a 1939 earthquake.

While Puerto Montt has suffered the greatest damage, Concepcion, considering its recent rebuilding, will probably provide the best information on how well current seismic design has stood up in the present Chilean quakes.

Farther south, below Puerto Montt, the port of Ancud on Castro Island was 90% destroyed by tidal waves. The highest wave was said to be 24 ft over high water level.

Several towns in the Puerto Saaverda coastal area were completely wiped out by landslide action.

Topographic maps of Chile's south-central interior that were accurate to the nearest foot two weeks ago now only provide a comparison with which to gage the changes. These include new lakes, new and reactivated volcanoes. One section of the country reports 1,000-ft changes in elevation over a wide area.

High in the Andes, east of Valdivia, two new lakes were formed. Water levels changed in many existing lakes. A new volcano was formed and six dormant ones rejoined the "active" list in Osorno Province and the Temuco area of Cautin Province. Osorno Mountain, an inactive volcano, did not erupt, but the government reports massive avalanches of rock were sheared off the mountainside and dropped into the valley below.

Spreading out from the Chilean coast, the earthquake effect was felt from Tokyo to Los Angeles and from Alaska to New Zealand.

The main tidal wave action seems to have moved northwest from the Chilean coast, although New Zealand, almost due west of Chile, reported "high waves." Japan and the Philippines were slammed by three series of waves topping at 20 ft.

A series of four waves struck Hawaii, leaving the most damage at Hilo, second largest city in the state. Casualties mounted toward 100 as rescue workers scoured through the rubble, and damage is set at $50 million. The same series of waves that punished Hawaii continued north to Alaska, where they reached a height of 15 ft.

In the Los Angeles area, Long Beach and Los Angeles harbors were swept by waves that left a $1-million bill behind in damaged and destroyed boats and dock facilities. Waves struck from San Diego to the Oregon-California line.

Anti-segregation amendment raises the question . . .

Will School Aid Make It This Year?

For the first time in its history, the House of Representatives has passed a bill granting federal aid for school construction. Five years of intensive effort on the part of its proponents was capped last week with approval of a measure that would build about $2.6 billion worth of classrooms in addition to those planned by local districts on their own.

But its chance for becoming law are only 50-50, much worse than they would have been without the anti-segregation amendment that was tacked on at the end of a long and intricate parliamentary wrangle.

As the bill passed the House, it provides:

- $1.3 billion of federal funds to be distributed to states over a four-year period according to the number of pupils in the state.
- The funds must be matched dollar-for-dollar in the first two years by either the state or local district, and in the last two years by the state.
- States must establish a system for granting priorities to neediest districts.
- A state's allotment will be reduced if local efforts to raise money, measured by a "school effort index," fall below the national average.

The House bill would mean for example, roughly $25 million a year of federal money, to be matched locally, for New York and California; $15-17 million for Illinois, Michigan and Ohio; around $5 million for states the size of Iowa or Louisiana; ranging on down to less than $1 million for sparsely settled states.

What will finally emerge from Congress, however, is anybody's guess. The Senate could adopt the House bill, striking out the Powell anti-segregation amendment. Or it could substitute its own bill, which would provide $2 billion over two years for construction and teachers' salaries. Either version would probably have to go back through the House Rules Committee, which would get another chance to block any school aid. The Rules Committee may be under severe enough political pressure to pass it; if so, some version of the school aid bill would go to the White House.

Whether President Eisenhower would sign it is another question. His own bill, underwriting local school bond issues by paying off half the principal and interest over a 30-year period, proved highly unpopular in Congress. On a voice vote, only one lone "yes" could be heard, and on a roll call it lost 319 to 80.

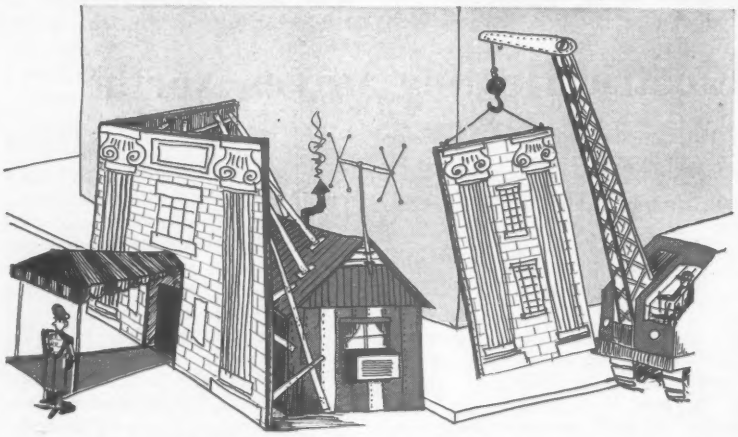
The House did, however, adopt one of two amendments to the Democratic bill which Eisenhower's aides said would make it "more acceptable." The House agreed to require matching funds all the way, but did not agree to distributing more funds to poor states than to prosperous ones.

The President will be under tremendous pressure to sign a compromise school bill—pressure from Vice President Nixon, Health-Education-Welfare Secretary Arthur S. Flemming, and 44 GOP congressmen who voted for the federal aid measure.

The 92 GOP members who voted against the final bill, on the other hand, would be left on the hook if the President signs it.

The Powell anti-segregation amendment was tacked on by a coalition of southern Democrats and Republicans in hopes of killing the bill in the Senate, where it could be filibustered, or in the ensuing parliamentary wrangle. Many northern Democrats, even knowing the motive behind the Powell amendment, still were afraid to vote against an anti-segregation measure and played directly into the opponents hands.

Some opponents had disputed the need for the federal government to assist state and local school districts. But few quarreled with the need for more classrooms. According to estimates by the states themselves, the 1959-60 school year started off with a shortage of 132,400 classrooms.



The rise and fall of . . .

The Shack That Grew Too Grand

A construction shack last week became the first victim of New York City's campaign to keep building materials from extending too far into the street—but not before it had tasted glory.

It was a modest enough shack when Fisher Brothers Construction Co. first slapped it together almost a year and a half ago—ordinary clapboard, 50x10 ft and meant to serve only as an aid in construction of an apartment house on Manhattan's fashionable East Side.

But as the building progressed the shack took on tone: Plumbing was installed, then air conditioning, then a few pieces of modern furniture.

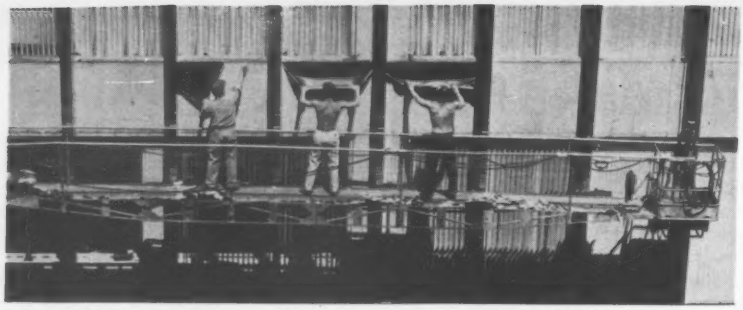
By the time the apartment was finished the lowly shack had graduated into a deluxe renting office, complete with wall-to-wall carpeting and objets d'art. It had cost $7,000 to finish and could hold up its head proudly even among the posh buildings around it.

But it had outlived its original function; it had even outlived its city permit, which expired on April 8.

By last week the city had had enough: The shack, New York decided, had grown too big for its breaches of traffic regulations. The city dispatched 15 wreckers, three bulldozers and a crane operator to cut it down to size.

But Fisher's men got there first. Out came the fancy furniture, the pieces of art, the carpeting, the air conditioning, the plumbing, the real estate agents. Down came the clapboard. Smooth flowed the traffic.

Now in New York just the memory remains of a construction shack that grew too grand.



Peeling Plastic Is Tough Job

Metal workers stripping the protective plastic coating off the stainless steel panels of Park Avenue's tallest skyscraper find the work tougher than peeling a grape.

The stuff is sticking like adhesive tape to Union Carbide's new 52-story headquarters building in midtown Manhattan (ENR July 10, 1958, p. 34), according to the maintenance subcontractor.

Since January the workers have been removing the white plastic from 4½ acres of black-matte finished wall panels. Consisting of two layers of elastic film, the plastic covering shielded the panels from scarring and staining during construction.

A weird aspect of the stripping operation is the changing wall pattern as the peeled panels change from white to black.

Electric Heating Moves North

Three housing projects—in New York City, in East Orange, N. J., and in Philadelphia—will be equipped entirely with electric facilities, including heating.

All three projects will have thermostats in each unit. Tenants will pay all the electric bills—including heating costs. Electric heating, not unusual in the South, is found less frequently in the North, where oil and coal are the usual heat sources.

The New York plans are for a privately financed apartment-house city consisting of 5,000 apartment units in twenty 16-story buildings. The $100-million development would also include a shopping center, an office building, two theatres, a heliport, tennis courts, garages and 10 swimming pools on a 40-acre tract.

According to Samuel J. Lefrak, president of the Lefrak Organization, sponsors and builders, construction will begin in July and the job will be completed by 1963.

The New Jersey project, "Electric City, U.S.A.," will be a $190-million community to be built by the developing firm of W. J. Happel & Co., East Orange.

The project will contain 6,000 private homes, ranging in price from $12,900 to $24,990, and 5,000 apartment units costing an estimated $130 million.

There will also be a $40-million, 100-acre industrial park and $20 million worth of shopping centers, schools and related projects.

The Philadelphia project is on a smaller scale—one 13-story building with 132 units—and at a smaller cost—$3.5-million. Owner-builder is Leonard Polis of Trevose, Pa. Construction here is also scheduled to start in July.

Electrical manufacturers and the utility companies that sell the power are particularly interested in pushing electricity for the heating of residential buildings, as well as buildings of other types. These three newly announced projects mark a step forward in efforts to push electric heating in the North.

Seattle Sewerage Plan Will Cost $108 Million

Seattle will spend $108 million on sewerage construction over the next 10 years. The program, featuring two $14-million treatment plants, has been approved by the Metropolitan Council.

A bid call is scheduled for early next year on a $6.5-million tunnel and $4.7 million of intercepting sewers, to be financed by a $25.7-million bond issue.

Aimed at ending pollution of the Duwamish River and Puget Sound, the two new treatment plants at Renton and West Point, will operate in conjunction with the two existing plants at Alki Point and Lake City.

It is hoped that the State Pollution Control Commission will permit the discharge of digested sludge from the two new plants into the Duwamish River and Puget Sound, but if this plan is rejected, Metro will consider the Zimmermann wet-oxidation process of sludge disposal.

House Votes $1.

The House of Representatives last week passed a public works appropriations bill providing $1.4 billion for fiscal 1961 construction programs of the Corps of Engineers, the Bureau of Reclamation, the Atomic Energy Commission, the Tennessee Valley Authority, and the power agencies of the Interior Department.

Following precedent, the House and its razor-sharp Appropriations Committee shaved the construction total below the amount requested by the President without impairing or diminishing the over-all content of the construction activities covered in the bill.

True, the House approved committee cuts that trimmed $77 million from the President's construction total. The reduction, however, consists largely of $35 million that committee economizers figured couldn't be spent in the next year anyway. They deducted this much in across-the-board subtractions from money totals going to Corps civil functions, to Reclamation and to AEC plant construction.

These deductions, for expected savings and carry-over of funds allocated but unspent this year, don't affect the individual allocations (see table). Each project holds title to the full amount allocated to it in the appropriation bill—as eventually signed into law by the President—without any loss resulting from the general deductions. Over-all, the deductions in the House-passed bill amount to $85 million, of which $50 million had been estimated by the Administration in making its original budget requests.

Here are the high points of the House-passed bill:

- Of 39 new construction starts proposed for the Corps and the Bureau by the President, the House approved 32 and added five unbudgeted starts of its own. Largest project deferred was the $60-million Milford Reservoir in Kansas. Until the Corps gets firm local commitments for repayment of $15 million for local water supply storage, Milford gets only enough money to complete planning.
- In addition, the House voted first-year loan funds for construction of six local irrigation projects and added to the bill initial planning funds for 15 unbudgeted projects, plus money for 26 unbudgeted surveys. A half dozen of the added planning starts, including five Great Lakes harbor and channel projects, are subject to authorization in the upcoming omnibus rivers and harbors bill this year.
- A study and report on pumped storage to improve the power output capability of federal projects is re-

$1.4 Billion for Public Works

quested from Secretary of Interior Fred Seaton.

• Despite the discretion given the Corps and Reclamation by the 1958 Water Supply Act, the Appropriations Committee made it plain no money would be voted for anticipated future water supply storage without firm repayment commitments from local beneficiaries.

• The House approved all six requested new Reclamation starts and added $4.8 million to start new upper Colorado Basin transmission lines recommended by Secretary Seaton.

For channel-deepening projects of the Corps, the committee noted that the benefits often go primarily to relatively few industries.

Recalling the Corps' lost fight to require industry contributions to the deepening of the Delaware River above Philadelphia, the committee urged the Engineers and the executive branch to develop guide lines setting channel depth limits that the federal government will pay for without contributions from the principal beneficiaries.

The House bill gives AEC $208 million for plant acquisition and construction, including $3 million for initial design and engineering of the $107-million Stanford University linear electron accelerator.

TVA now raises most of its construction money through sale of revenue bonds, authorized by Congress last year. The House-passed appropriations, however, include $20 million to pay for federal construction by the agency. Two new federal projects in TVA territory, a lock at Wheeler Dam, Ala., and the new Milton Hill Dam near Oak Ridge, Tenn., get first-year construction funds of $4 million each.

What House Passed—What Ike Asked . . .

Appropriations exceeding $3 million—(000 omitted)

Corps of Engineers Projects

ALABAMA	
Columbia Lock and Dam	$3,325
Jackson Lock and Dam	4,238
Eisenhower requested	4,409
Fort Gaines Lock and Dam	20,178
ARKANSAS	
Arkansas River bank stabilization	5,000
Bull Shoals Res. (Units 5 and 6)	3,200
Dardanelle Lock and Dam	6,100
Greers Ferry Res.	14,143
CALIFORNIA	
Black Butte Res.	5,900
L.A. County Drainage Area	13,100
Sacramento River Ship Channel	5,000
	8,000
Terminus Res.	6,300
FLORIDA	
Central-Southern Florida	10,000
GEORGIA	
Hartwell Res.	21,375
ILLINOIS	
Carlyle Res.	3,500
Illinois Calumet-Sag Channel	7,500
	9,500
IOWA	
Missouri River Channel Work:	
Sioux City to Omaha	5,600
Kansas City to the mouth	3,475
Red Rock Res.	3,600
KANSAS	
John Redmond (Strawn) Res.	3,800
Pomona Res.	3,500
Tuttle Creek Res.	16,500
KENTUCKY	
Barkley Dam	3,300
	17,100
New Richmond Locks and Dam	15,000
Greenup Locks and Dam	9,959
Louisville Lock and Dam	9,215
Markland Lock and Dam	12,600
LOUISIANA	
Gulf Intracoastal Waterway	4,166
Mississippi River, Gulf Outlet	8,750
MICHIGAN	
Great Lakes Connecting Channels	30,000
MINNESOTA	
St. Anthony Falls	4,900
MISSOURI	
Pomme de Terre Res.	3,600
St. Louis	6,250
MONTANA	
Fort Peck Dam (2nd power plant)	4,500
NEW HAMPSHIRE	
Hopkinton-Everett Res.	8,370
NEW JERSEY	
Delaware River Channel Work	11,700
NEW MEXICO	
Abiquiu Res.	4,600
NORTH CAROLINA	
Wilkesboro Res.	3,300
NORTH DAKOTA	
Garrison Res.	4,000
OHIO	
Dillon Res.	4,223
New Cumberland Locks and Dam	6,180
Pike Island Locks and Dam	9,000
OKLAHOMA	
Eufaula Res.	20,700
Keystone Res.	14,630
	17,400
Oologah Res.	3,700
OREGON	
Cougar Res.	12,300
Hills Creek Res.	10,500
John Day Lock and Dam	33,344
	37,000
PENNSYLVANIA	
Allegheny River Res. (Kinzua)	4,530
SOUTH DAKOTA	
Big Bend Res.	10,000
Oahe Res.	53,500
TEXAS	
McGee Bend Dam	6,000
Navarro Mills Res.	3,100
Waco Res.	11,000
VIRGINIA	
John W. Flannagan (Pound) Res.	3,100
WASHINGTON	
Eagle Gorge Res.	4,400
Ice Harbor Lock and Dam	30,000
WEST VIRGINIA	
Summersville Res.	4,400

Bureau of Reclamation Projects

ARIZONA	
Gila Project	$4,219
CALIFORNIA	
Central Valley Project	61,138
	61,306
COLORADO	
Collbran	5,140
NEVADA	
Washoe Project	3,137
OKLAHOMA	
Washita Project	6,960
TEXAS	
San Angelo Project	11,000
UTAH	
Weber Basin Project	8,183
WASHINGTON	
Columbia Basin Project	4,606
	6,100

Upper Colorado River (USBR)

ARIZONA	
Glen Canyon Dam	$23,535
	27,035
NEW MEXICO	
Navajo Dam	11,776
UTAH	
Flaming Gorge Dam	12,000
Transmission lines	5,318
	518*

** Bureau of the Budget is preparing a supplemental request.*

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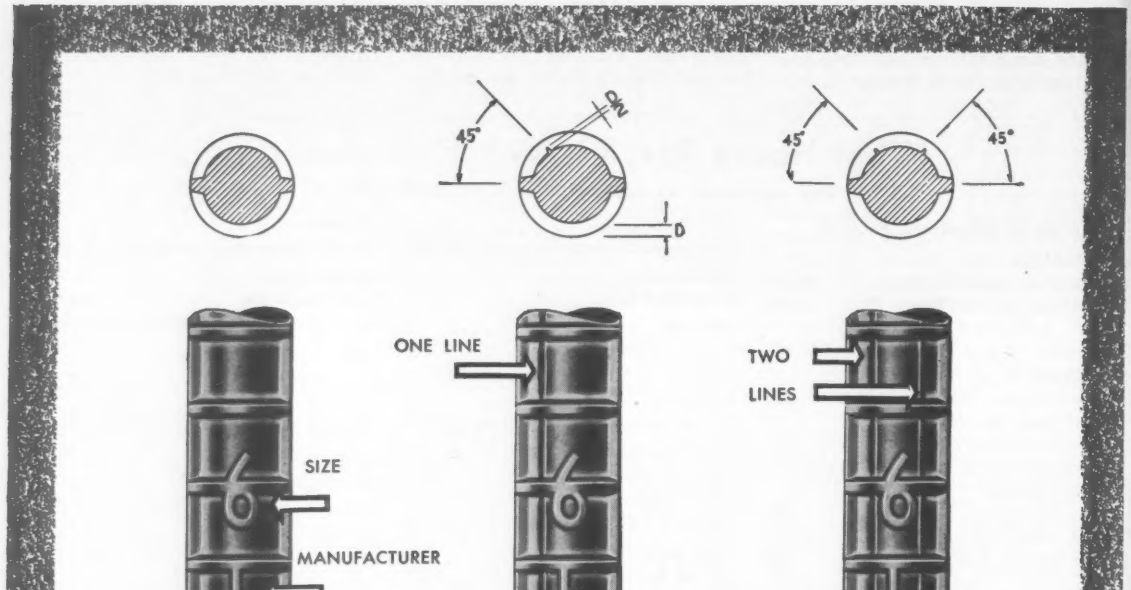

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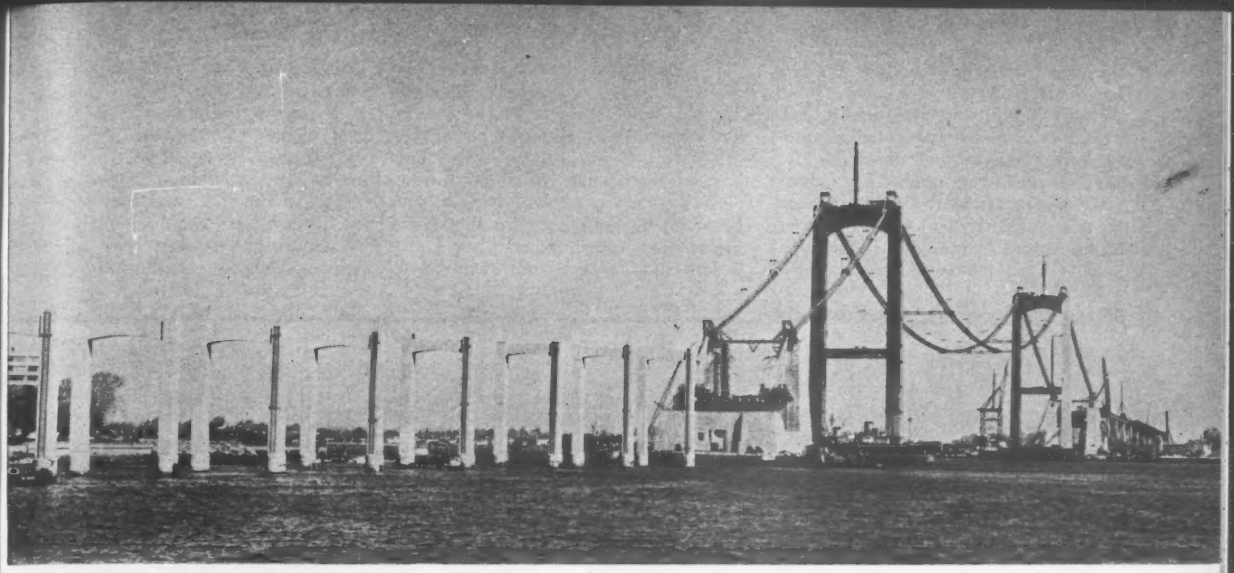


For Throgs Neck Bridge . . .

Two Cables—14,000 Miles of Wire

The last of some 14,000 miles of wire has been placed across the towers of the Throgs Neck Bridge, and spinning of the two main cables of the $90-million structure is complete.

The 10,952 wires that make up each of the cables have been grouped, compacted and banded. Next they will be painted and fitted with suspender cable bands and suspender ropes.

The bridge, which is scheduled for opening early in 1961, will connect New York City's Boroughs of Bronx and Queens. A unit in the Interstate Highway System, it will link Long Island expressways and parkways with the New York State and New England Thruways. The structure is 13,953 ft long, including approaches. Its suspended spans total 2,910 ft—a main span of 1,800 ft and two back spans of 555 ft each. Its towers rise 355 ft above MHW and the center of its main span clears MHW by 142 ft.

Progress has been steady since work began in October, 1957. Last December the American Bridge Division of United States Steel Corp. began cable spinning. **Here's how the main cables were spun:**

The first step was erecting a catwalk or footbridge. It is customary—and Throgs Neck Bridge was no different—to use as the main support for the footbridge cables that will later be cut up to make the suspenders. This cable is pretensioned during its manufacture so that it will maintain its length when, as suspender cable, it carries the live and dead loads of the structure.

While the catwalks were being erected from anchorage to anchorage and over the towers, the elements necessary for the spinning operation were set up on the anchorages. Included were working platforms, stairways, spinning machines for handling the spinning wheels, tensioning towers, reel stands and control stations. On each side of both anchorages and both towers, tramway frames were erected to carry spinning wheel cables. With the plant installed, the permanent work began.

Reels of wire were barged to the anchorages and hoisted into position on the reel stands. Thereafter there were eight reels ready for use on each of the anchorages. The reels averaged 370,000 ft of 0.196-in.-dia galvanized wire.

Before the actual cable spinning was started, a guide wire was placed in each span. These wires were surveyed at night when they had a uniform temperature throughout, and were adjusted to the correct sag.

A single wire was then taken from each of two reels at each anchorage and run through a series of sheaves to the top of the tensioning towers. Here the wires were looped under floating tensioning sheaves, which, by means of counterweights, kept the wires taut. The wires were then fed through another series of sheaves to the working platforms at the strand shoes. The dead end of each wire was clamped to the catwalk; the running end was looped under a strand shoe then placed over the spinning wheel. The wheel then pulled the wires over the bridge towers to the opposite anchorage, and the spinning was under way.

Actually the term spin is a misnomer. The wires are neither twisted nor braided. They are merely carried forward and backward between the anchorages so that they lie parallel to and against each other. Two dual-sheave wheels were used for the spinning of each cable. The wheels left opposing anchorages at the same moment, traveled at a maximum speed of 750 ft per minute, passed each other at the exact center of the main span, and arrived at opposite anchorages at the same time. As the wheels moved eight wires were laid simultaneously, four from each anchorage.

As each wheel passed over the top of each tower, its dead wires, coming from the bottom of the sheaves, were dropped into their respective positions in the saddle. The live wires were dropped into sheaves beside the saddle. At the towers and anchorages the dead wires were clamped to winch lines which adjusted them to their proper shape as they came off the wheels.

When the wheels reached the anchorages, the wires were removed and looped under strand shoes on the eye bars. At this point the live wires were adjusted for shape back to the point of origin, and wires from adjacent strand shoes were looped over the spinning wheels for a return trip.

When 296 wires were strung, a strand was complete. The wire was then cut and by means of a small cylindrical sleeve was then attached to the dead end originally clamped to the catwalk. Thus each strand consists of a single, continuous wire. (The sleeves were also used to connect wires from different reels and to make connections

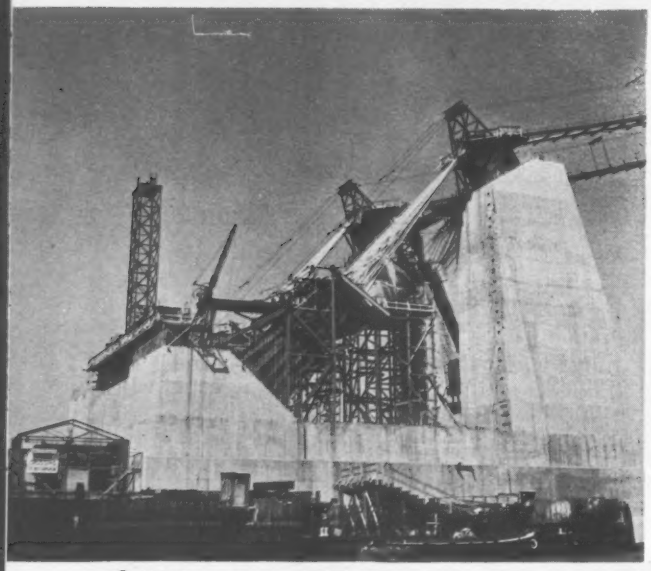
in wires that had to be shortened or lengthened.) As each strand was completed, it was squeezed to a round shape by a special tool and banded at intervals with thin metal strapping.

Next came the preliminary adjustment of the strand. This was accomplished during daylight hours by means of shims and hydraulic jacks mounted in the eye bars. An engineer standing at the midpoint of the main span gave directions to men on the anchorages. The tension of the strand was taken by a jack, a shim was removed from the eye bar, then the jack was released. This lowered the strand. Final positioning of each strand was done at night after thermometers inserted into the strand showed a uniform temperature.

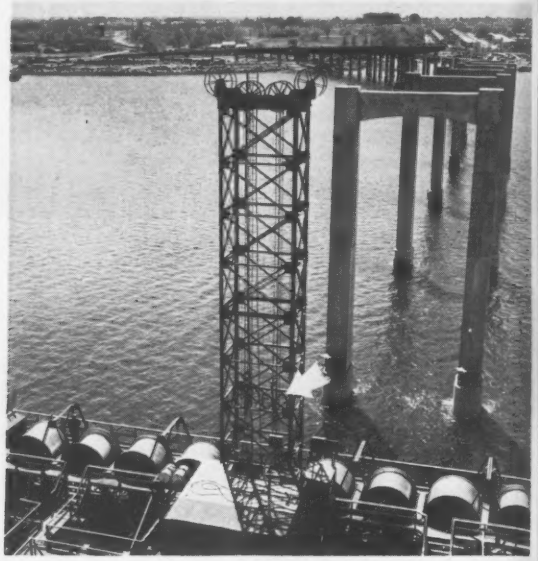
The strands were individually positioned so that the initial shape of each cable was hexagonal. Then the cables were compacted into a circular section.

The main cables of the Throgs Neck Bridge are now at this stage. The catwalks are being rehung from the main cables so that the suspender ropes can be retrieved. These ropes will be returned to the manufacturer who will stretch them out, cut them to predeter-

Wire into cable, step by step

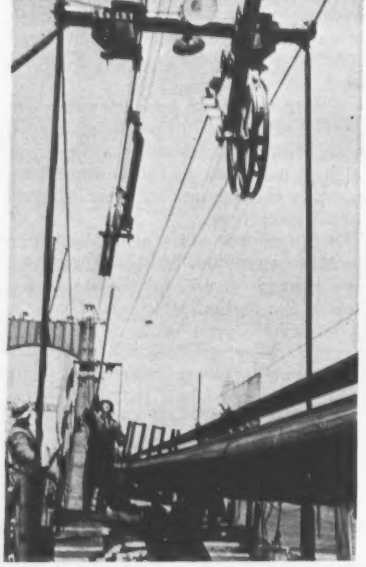


1 Workmen strung 14,000 miles of wire while spinning the main cables of Throgs Neck Bridge. Cable reels, tensioning towers and spinning machines were worked from here.

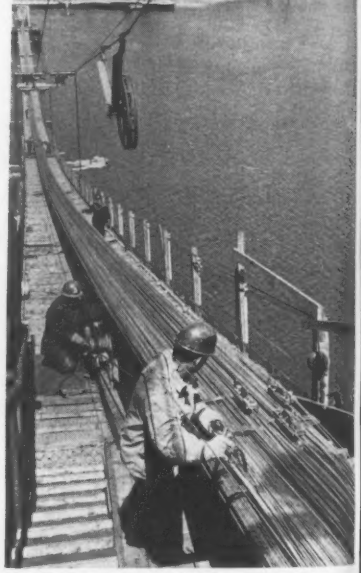


2 Wire from reels on anchorage is carried over idler sheaves on tensioning tower, looped under counterweighted, floating sheave (arrow) then returned to tower before . . .

5 Dead wires are positioned in strands on the saddle. Live wires ride temporarily over sheaves (arrow).



6 Wheels from opposite anchorages pass at center of the main span. Men grab wires with long poles.



7 As spinning wheel traverses main span, dead wires are dogged-off to clamps on strands. Winch adjusts wire sag.

mined lengths, and then socket them.

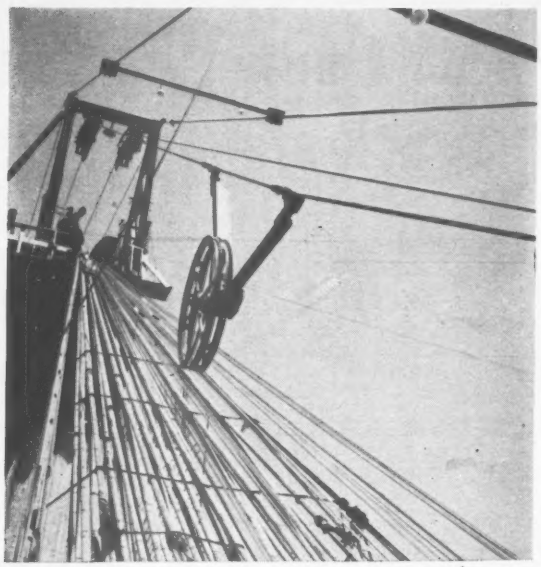
Before the ropes are cut, however, they will be given a stripe of paint that will run in a straight line for their full length. During the socketing and the hanging of the suspenders, this stripe must be kept in a straight line. Any spiralling of the stripe will show that the rope is twisted and therefore is longer or shorter than it should be.

The final operation in the fabrication of the main cables is the wrapping. A special machine will spin around the 10,952 wires that make up each cable to wrap them in a soft galvanized wire, much as the joints of a fishing rod are wrapped with thread.

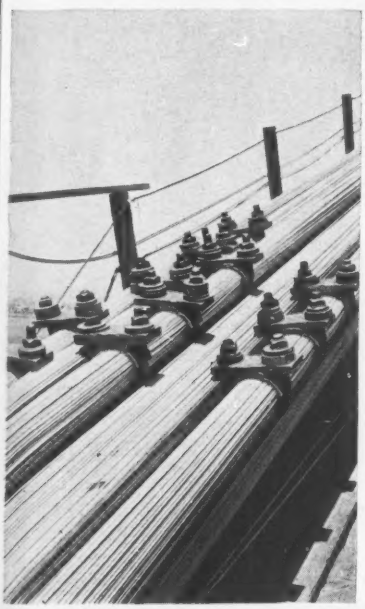
However, because the cables will stretch as they are loaded, and consequently become thinner, the wrapping cannot be started until after the main cables are carrying most of the dead load of the structure. This will be sometime next fall.

Work on the suspended structure is being done under the supervision of Ammann & Whitney, New York consultants who designed this section of bridge. Owner is the Triborough Bridge and Tunnel Authority.

3 . . . it is run to the working platform atop anchorage eyebar. Here it goes under strand shoes (arrow) then over spinning wheel for transport to other anchorage.

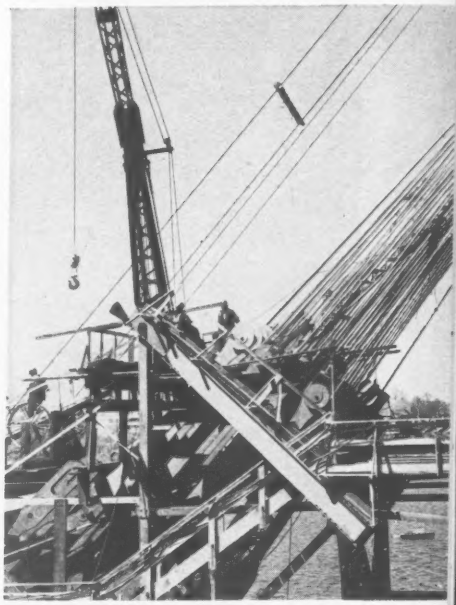


4 The wheel, which has two sheaves, carries four wires (two wires looped) up the backstay span to men waiting at anchorage saddles. Bottom wires are dead, top are alive.



8 Completed strands are grouped and shaped by clamps. What seems to be many wires is a single continuous wire.

9 Strands are banded so wires stay together. Engineers phone instructions for lowering high strand to . . .



10 . . . men on the anchorages. Hydraulic jacks and shims lengthen the eye bar chain to lower individual strands.

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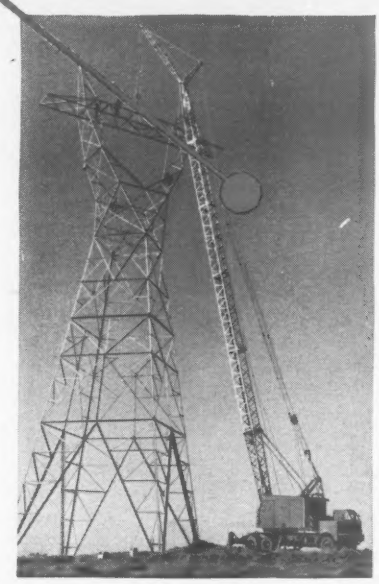

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100' boom at practical 70' working radius . . . 10,340 lbs.
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Fallout Shelters:

Effectiveness Varies With th

By Neal FitzSimons

Atomic fallout protection factors are somewhat like engineering safety factors. A high factor may be very safe, but it also can be expensive; a low factor is dangerous.

Unlike engineering safety factors, however, an atomic protection factor involves many more unknowns. A conservative attitude, therefore, is essential.

This article deals with protection from fallout deposited within a few days of an attack—early fallout is a much greater danger than fallout that remains aloft for long periods.

What type of fallout protection is economical for homes and schools?

In many cases, shelters can be incorporated into new homes and school buildings at almost negligible cost. This is especially true if the shelter area can be designed to serve a dual-purpose in the structure.

In a new single-family home, for example, a "C" category shelter (see table) may be obtained by partitioning off a portion of the basement with suitable shielding materials, such as concrete or clay masonry units. This would increase the cost of a new home some $150 to $200, probably less than 2% of the basic cost of the house.

For another $50, a "B" category can probably be obtained. This type of shelter is a room about 7 ft by 10 ft—big enough for a variety of uses.

Another type of family shelter particularly suitable for new construction is a room built adjacent to the usual basement, possibly under a porch or patio. A 7x10-ft room would provide "B" category protection for about $500. And the addition of an extra room to the house may easily justify the extra cost.

For existing buildings, the expense of fallout shelter modification is divided between shielding and "habitability" features, ventilation and sanitation. Using standards set up by the Office of Civil Defense and Mobilization, the cost of converting portions of existing buildings into shelter areas (without materially affecting their present use) averages from approximately $40 to $60 per person.

In schools, conversion of certain spaces into shelter areas can often create a new and useful room. One plan calls for crawl space under a school to be enlarged and modified to provide, not only a high quality shelter, but also additional student activity rooms or storage.

What type of protection is economical for commercial structures?

The basements of multi-story commercial buildings readily lend themselves to adaptation as large group shelters. An excellent "A" category shelter may be obtained by minor modifications of the ventilating and sanitary systems and by building 6-in. to 8-in.-thick floor slabs on the ground floor.

In basements of one or two story commercial buildings, similar protection may be in "B" category unless the roof slab and second floor slabs are also thickened. Studies indicate that slab thickening costs should be about 10 to 15 cents per sq ft for each 1-in. increment.

Shelters above ground are more of a problem to build. However, central areas of some new commercial buildings can be "hardened" with thicker walls and floors to become fallout shelters in the "B" category, without causing a substantial increase in the initial cost of construction.

Upper floors in isolated multistory buildings lend themselves to hardening, but in downtown city complexes, lower floors may be better.

The number and sensitivity of shielding variables in above-ground areas makes it unfeasible to give general cost figures. But an upper limit of 5% of initial construction cost may be used as an approximation.

Shelters in These Categories . . .

A—OCDM underground shelters; sub-basements of multi-story buildings; underground installations (mines and tunnels.)

B—OCDM basement shelters (heavy masonry residences); basements (without exposed walls) of multi-story buildings.

C—OCDM basement shelters (frame and brick veneer residences); central areas of basements (with partially exposed walls) or multi-story buildings; central areas of floors near mid-height of large multi-story buildings with heavy exterior walls and floors.

D—Basements (without exposed walls) of small one or two-story buildings; central areas of floors near mid-height of large multi-story buildings with light exterior walls and floors.

E—Basements (partially exposed) of small one or two-story buildings; central areas of lower floors in large multi-story buildings; central areas on ground floor in one or two-story buildings with heavy masonry walls.

F—Aboveground areas of low buildings, including residences, stores, factories, etc.

. . . Offer This Chance of Survival

Category of Protection	Fallout Deposit Heavy	Medium	Light
A	Excellent	Excellent	Excellent
B	Good	Excellent	Excellent
C	Fair	Good	Excellent
D	Poor	Fair	Good
E	Nil	Poor	Fair
F	Nil	Nil	Poor

Mr. FitzSimons is a research engineer with the Office of Civil Defense and Mobilization.

the Cost

What shelter areas should the community provide?

When private shelters are not feasible, the community may take over public shelter construction.

For example, in a suburban subdivision where basements are precluded by local site conditions, it would be too expensive to have individual above ground shelters for each family. Instead it might be more economical to construct a public shelter in a nearby park. Such a shelter could either be underground or mounded over with earth. Suitable landscaping would eliminate aesthetic objections.

The structure could serve the community also for such purposes as youth center, offices of local government or meeting hall.

Prices of group fallout shelters may well vary from $100 to $200 per occupant. But if the shelter serves dual-purpose occupancy, the cost is less. On a unit area basis, the increment cost for shelter is roughly $2 to $4 per sq. ft.

Detailed surveys were recently made in various communities to determine shelter area capacity and needs. The cost of such surveys may be seen by considering a county of about 150,000 people with one medium sized city, several towns and villages, and a total area of about 1,000 sq miles.

An architectural or engineering firm oriented in fallout shelter surveys could complete a detailed survey of such a county in from four to six months at a cost of $25,000 to $30,000. The survey would provide a complete inventory of the shelter category and capacity of existing structures, as well as preliminary estimates of the category, capacity and cost of a program for modifying existing shelter to obtain an optimum level of community protection.

The studies often demonstrate to townspeople that critically needed fallout protection can be obtained at costs far lower than anticipated, if existing structures are used efficiently and new structures have protection built in to them.

For further professional assistance in developing a shelter program, the Office of Civil Defense Mobilization in cooperation with other government agencies and private industry, has developed procedures for the solution of shielding problems peculiar to radioactive fallout. Guides and manuals are available to architects and engineers.

Provide Permanent Improvement?

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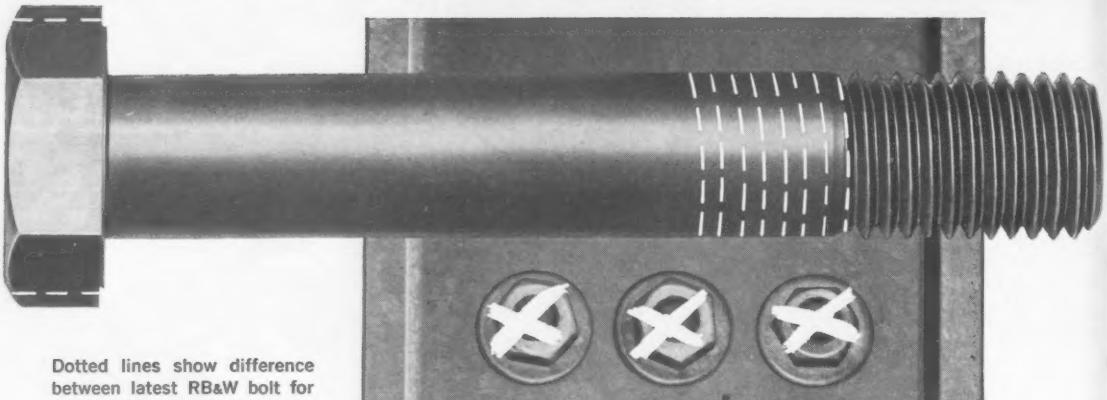
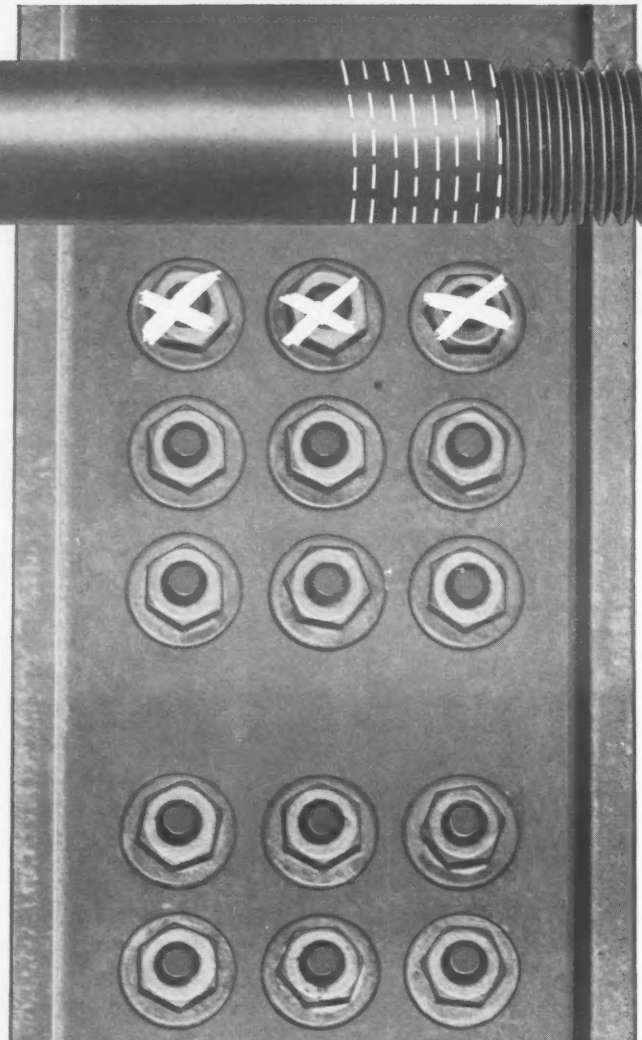


Dotted lines show difference between latest RB&W bolt for construction and original high strength structural bolt.

2 bolts now do the work of 3!

With large head bolts in this typical splice you could eliminate 6 holes and save 6 regular bolts and nuts plus 24 of the hardened washers.



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LARGEST INDEPENDENT PRODUCER OF HI

W High Strength Bolts
% in bearing connections

- **New, shorter thread length increases allowable shear strength -- permits 2 bolts to replace 3 rivets**
- **Heavy head design eliminates one of the two washers**
- **Fully tested and approved by AISC and Research Council on Riveted and Bolted Structural Joints**

RB&W
115th year

Plants at: Port Chester, N.Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. Additional sales offices at: Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas; San Francisco. Sales agents at: Cleveland; Milwaukee; New Orleans; Denver, Fargo.

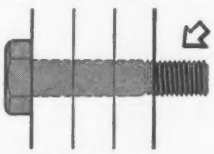
HERE'S the next big advance in structural steel connections. RB&W High Strength Bolts with new head and thread design are now ready to take another big bite out of construction costs.

Erectors will save on total fastening time and material costs. Shop fabricators will turn out tonnage faster than ever before, cut the cost of fabricated steel to a new competitive level. Designers will be able to reduce the number of holes at joints and still get specified total shear strength.

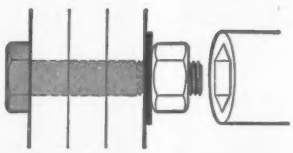
With new large head, this bolt ends need for one of the two hardened washers. With shorter thread length, it excludes threaded section from shear plane in connections, enabling tensile/shear ratio to be changed to 1 :1.1 from the former 1 :0.75. This means that instead of using one bolt for one rivet, you can use two new bolts where you would need three rivets or three regular high strength bolts.

RB&W is proud of its significant contribution to this engineering breakthrough – one which has been extensively tested, and approved by the appropriate bodies.

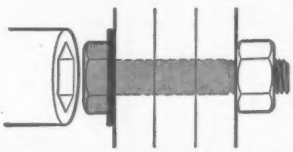
Once again you see solid evidence that the strongest (and clearly the most economical) fasteners for structural joints are high strength bolts. For the best of such bolts, specify RB&W. You get full conformance to ASTM A 325, and *certified* quality. For more data, contact Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N.Y.



NO THREAD IN SHEAR PLANE of joint. This increases effective shear area of bolt, allows higher working stresses, so that 1/3 fewer bolts provide specified design strength in bearing-type joint.

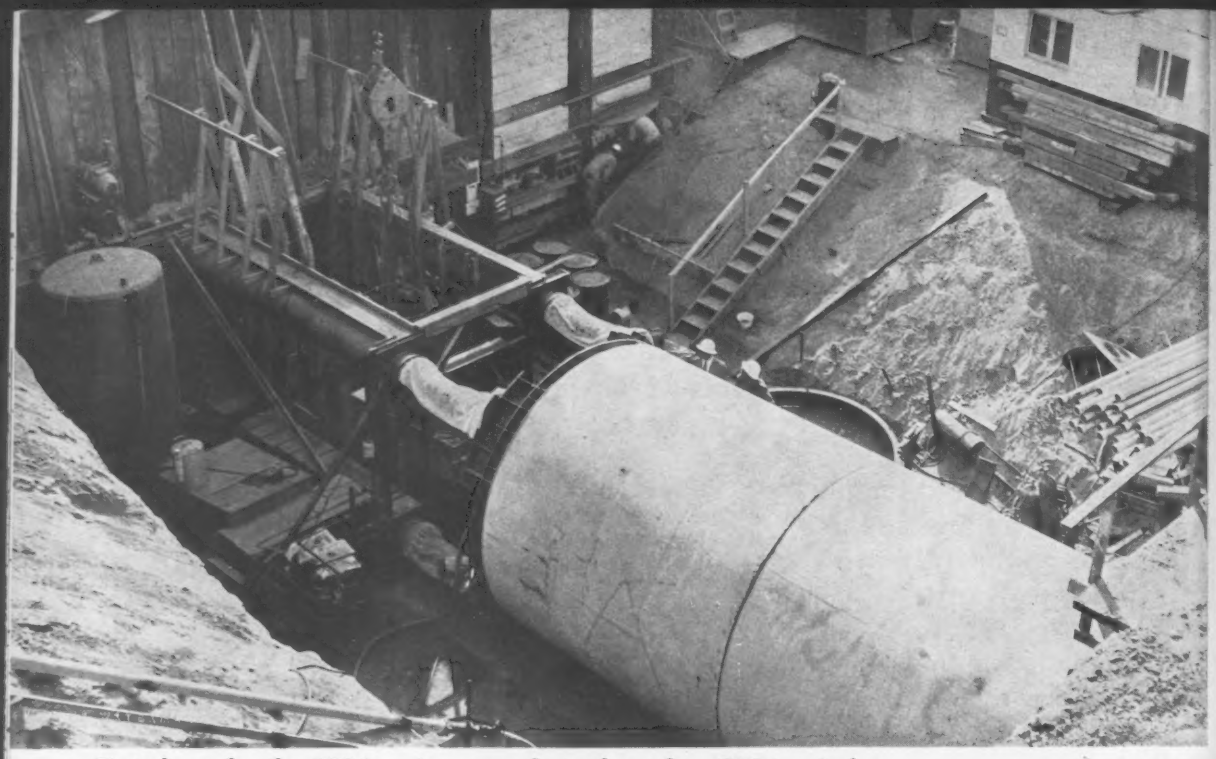


ELIMINATE 50% OF WASHERS at the least. Large head gives adequate bearing area to prevent crushing of seat. Washer now goes only under nut or bolt head, whichever is rotated in wrenching.



EASY, FAST INSTALLATION. With standard holes 1/16" oversize, bolts can be inserted by hand even when holes are misaligned 1/16". Reaming is virtually eliminated. Now tighten from head or nut—with same wrench.

OF *HIGH STRENGTH BOLTS FOR CONSTRUCTION*



First shove for the 120-in. pipe came from these four 250-ton jacks.

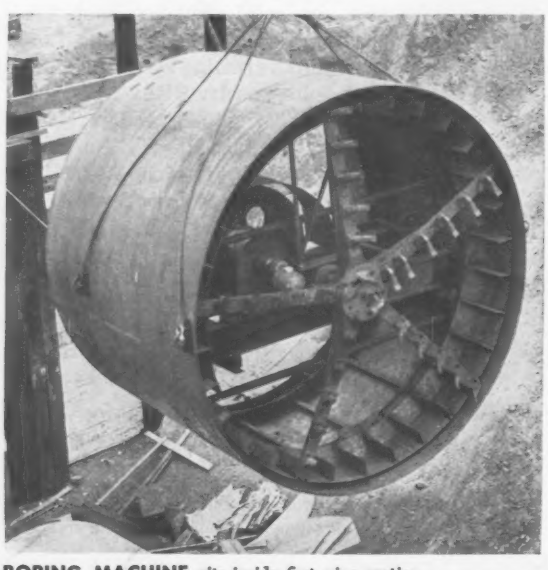
Jacking 1,200 Feet of Concrete Pip

Construction crews have just completed jacking 1,200 ft of 120-in. ID concrete pipe for a storm drain job at National City, Calif. It is perhaps the longest such operation for large pipe ever accomplished entirely from one jacking pit.

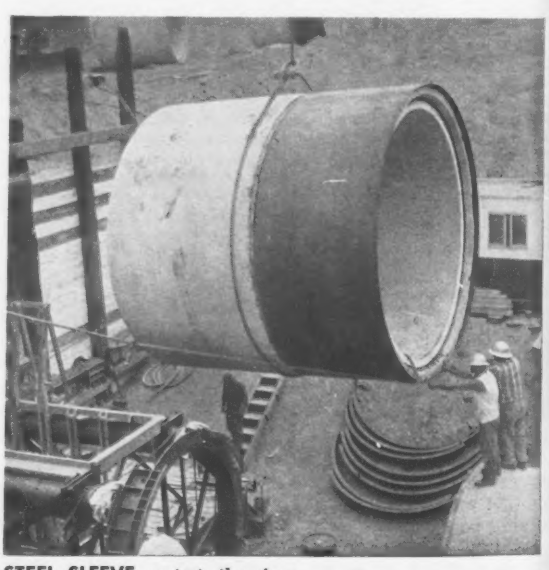
Methods and equipment used were devised by Johnson Western Constructors of San Pedro, Calif., which won the $375,000 contract on an alternate low bid based on jacking rather than conventional open trench methods.

To do the job, the contractor used:

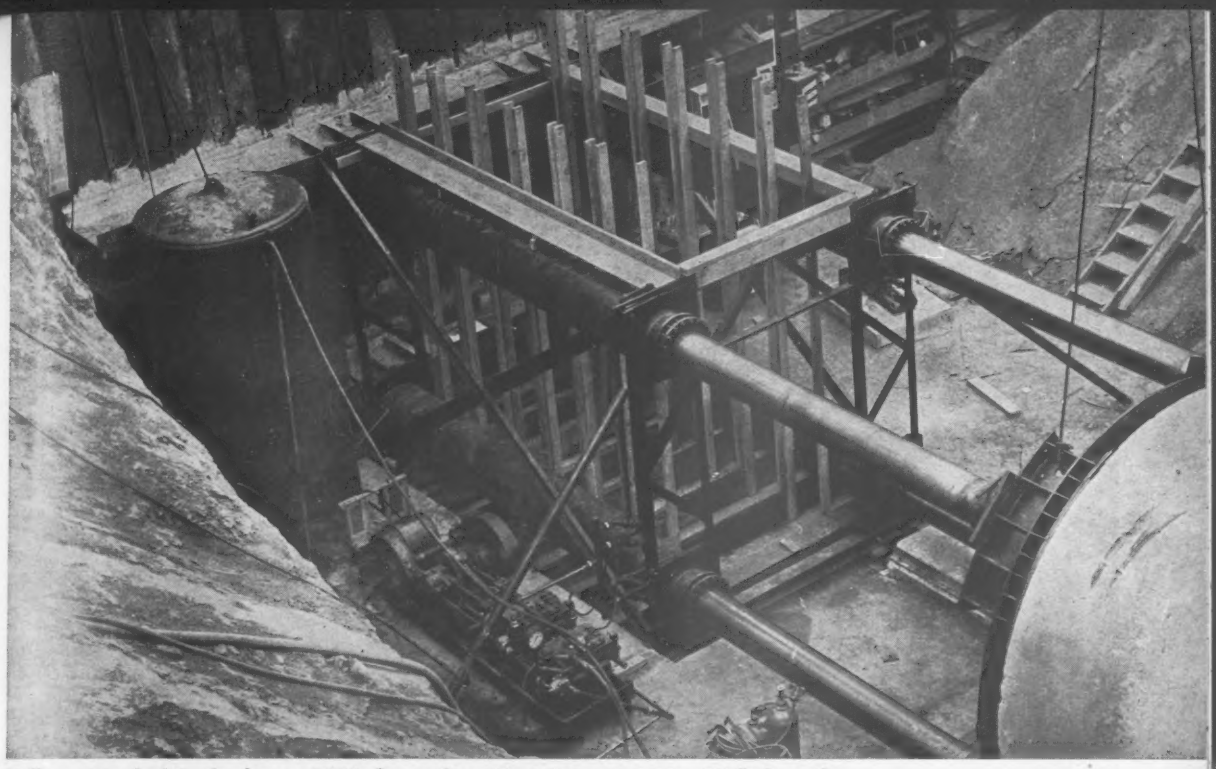
- A boring machine that chewed away the ground ahead of the jacking.
- One primary and four intermediate jacking stations, which provided 3,800 tons of jacking effort.
- A special lubricant made of bentonite, crude oil, a jelling agent and water.



BORING MACHINE sits inside first pipe section.



STEEL SLEEVE protects the pipe.



Fully extended jacks have 13½-ft stroke. Pipe is precast in 12-ft lengths.

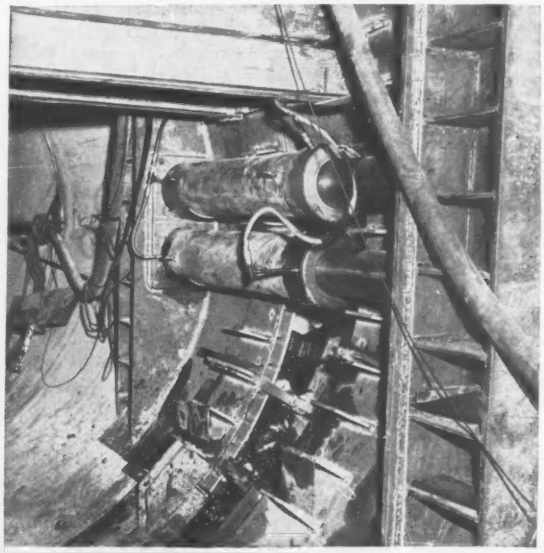
Pipe for a Storm Drain

• A method for steering the pipe by varying the tension in steel channels that makes the first four pipe joints a rigid assembly.

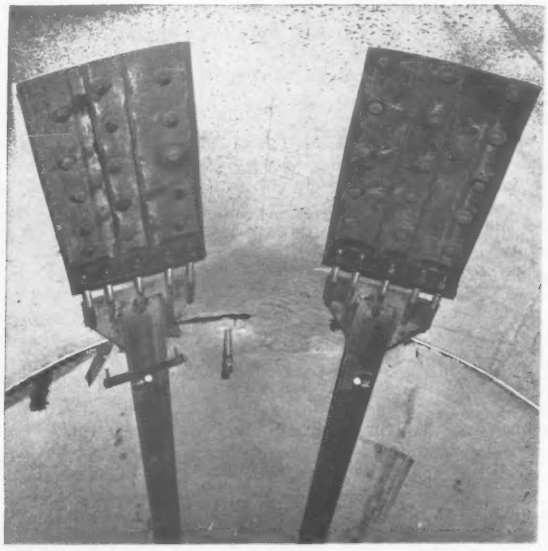
Ground conditions for jacking were favorable—no running ground, no solid rock and no ground water.

National City is tucked between San Diego and the Mexican border. The storm drain construction is part of a plan for providing an interceptor storm sewer that will relieve flooding during heavy rains. Included in the plan is 3,250 ft of 120-in. reinforced concrete pipe estimated to cost about $1 million. Completion of the entire project is expected in 1961.

In the bid call, plans specified open trench installation using either precast pipe or monolithic construction. But alternate methods were permitted, and



FOR ADDED POWER—four intermediate jacking stations.



BOLTS are part of a guidance system devised for the job.

CONTROL OF THE OPERATION is in the hands of the boring machine operator. He has a telephone hookup with operators at the primary and intermediate jacking stations.

SINGLE CONTROL POINT is operation center for all intermediate jacking stations.

the jacking proposal proved to be cheaper.

The pipe jacking scheme has an advantage over open trench construction in this instance due to a restricted right-of-way width of 100 ft and the 75-ft depth of the pipe. Open trench methods would have required extensive shoring. And there wasn't much room to maneuver equipment.

The jacking also has a slight cost advantage: That's because the overburden is almost completely undisturbed, permitting less reinforcing steel in the jacked pipe than would be required for pipe installed in open trench. Thus the bearing load on the pipe is less.

Ground material is nonhomogenous; it varies from hard dry clay to a cemented sand, gravel and cobble formation that is almost a conglomerate. There are some loose sandy pockets but no running or squeezing ground.

In this job the contractor didn't actually force the pipe through the solid ground. Instead, a rotary boring machine chewed away the soil at the leading end of the pipe string.

The boring machine has a rotating ring with five arms on which are mounted hard-faced teeth in a staggered pattern. Teeth at the extreme outer edge can be turned outward slightly—so that the resulting bore is slightly bigger than the outside diameter of the pipe.

The boring machine is rigidly attached to the first pipe section, as is a steel cutting edge. The cutting edge is constructed with a larger diameter than the pipe to insure an annular space of $\frac{3}{8}$ to $\frac{1}{2}$ in. throughout the length of the job. The cutting edge has a pipe manifolding and injection system through which is pumped the primary application of lubricant.

A 20-hp air motor provided power for the boring machine. The motor operates through a flexible coupling, variable speed reducer and a chain drive. The cutting head is capable of 6 rpm under load.

Excavated material falls into vane-type buckets immediately behind the cutting head. As the machine rotates, the buckets elevate the material to the top of the pipe. Here the cuttings are dumped on a conveyor belt that carries them to a hopper 12 ft behind the face of the tunnel. The hopper has hydraulic gates that feed the material into a battery-driven, rubber-tire muck car. The car has a removable skip for hoisting the material out of the jacking pit. And the car is also used for transporting lubricant and other materials.

Capacity of the muck car is 2 cu yd loose—adequate for continuous operation of the boring machine up to about 900 ft of one-way travel. During the final 300 ft of pipe-jacking work, progress was delayed slightly and intermittently as the conveyor-belt hopper became full.

The mucking machine has a horizontal travel of 20 in. After reaching full travel, the cutter head was retracted and the pipe jacked ahead to permit the machine to take another bite.

First step in the construction operation was excavation of a jacking pit to permit installation of the primary jacks and to provide room for installing pipe one section at a time. A 50-ton stiffleg derrick next to the pit emptied muck skips and lowered the 30-ton pipe sections. (Pipe sections, made by American Pipe and Construction Co. in their San Diego plant are 120-in. ID, 12 ft long and have 11 in. wall thickness.)

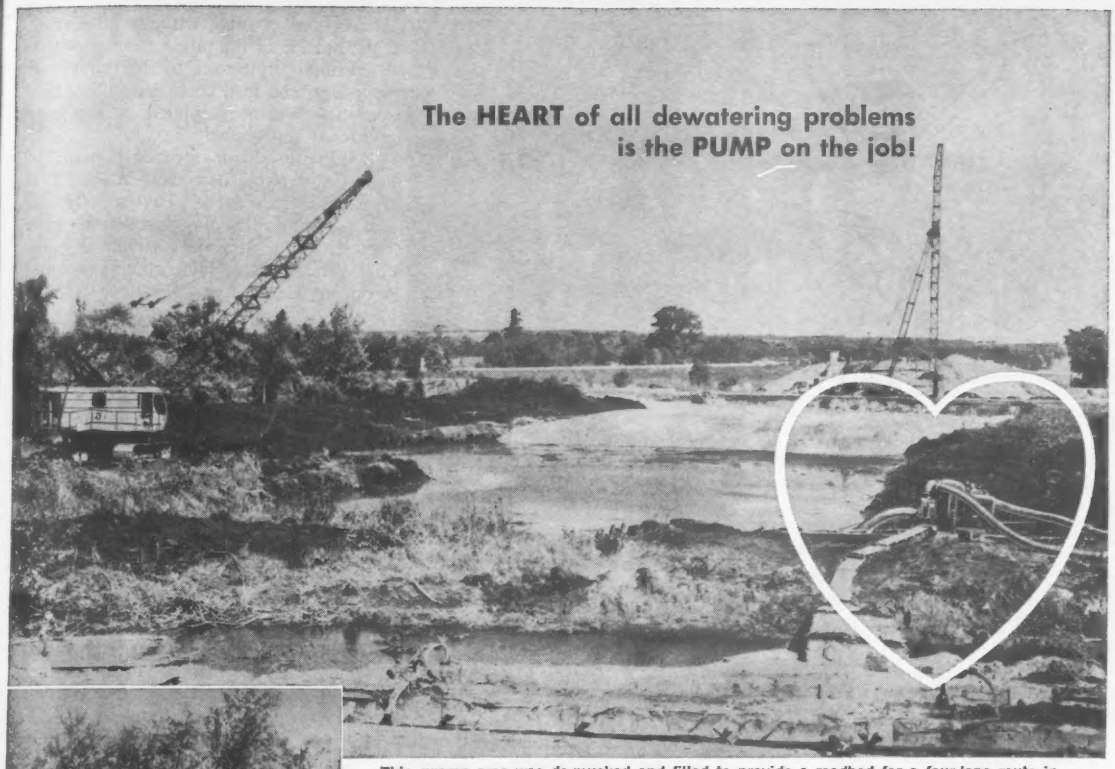
Installed in the jacking pit are four primary jacks, each with 13½-ft stroke and 250-ton capacity. The jacks are powered by a two-stage hydraulic pump with a working pressure of 1,800 psi. These jacks were designed by Johnson Western and built by Hydraulic Press and Engineering Co. of Long Beach.

The jacks are supported on a steel frame and react against 27-in. WF beams bearing against vertical 12x12-in. timbers. Grouting the ground behind the timbers provided further support.

The jacking load is distributed to the pipe through a fabricated structural ring made of welded plate of ¾-in. maximum thickness. The ring is faced with old conveyor belting to minimize damage to the pipe.

Because the 1,000-ton jacking effort at the primary jacking station would not have been enough to push the pipe the full 1,200 ft, four intermediate jacking stations were installed. Three of these mounted four 200-ton jacks; the fourth, two 200-ton jacks.

At intermediate jacking stations, pipe sections were equipped with a 5 ft steel sleeve. On installation, this sleeve was welded to a 3x3¾-in. angle



This swamp area was de-mucked and filled to provide a roadbed for a four-lane route in Utica, N.Y. Marlow self-primers, in right foreground, were used to control and remove water.

Two of the three big engine-driven, self-priming contractor pumps used on the project for dewatering operations are above.

Just 3 MARLOWS handled 540,000 GPH to push a road through a swamp

D. W. Winkelman Co., Inc., of Syracuse, recently built a 1.2-mile portion of a north-south arterial route in Utica, N. Y. The construction of this four-lane segment of the road cost $4,474,259.

One of the major problems the Winkelman organization tackled on this job was a swamp area 1,700 feet long. Muck went down as deep as 15 feet below ground level. A crane with a 70-foot boom and dragline bucket was used for "muck-out" operations. Approximately 1,000,000 cubic yards of barrow was used as fill.

During the entire "muck-out" and fill operation, two Marlow 8-inch and one 10-inch, engine-driven, self-priming, contractor pumps were used to control and remove water from the area. With all three pumps in operation at the same time, they handled up to 540,000 gallons per hour! In emergency situations, the three Marlow self-primers were capable of pumping 558,000 gallons per hour.

If you have a tough dewatering problem, look to Marlow for your answer. Marlow builds a complete line of AGC-rated contractor pumps as well as famous "Mud Hog" diaphragm pumps for handling muddy and trash laden liquid.

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LUBRICANT is forced through valve to coat outside of pipe.

bolted to the spigot joint of the pipe section ahead of it. And a 10x3½-in. circular channel was inserted to preserve the gap between pipe lengths.

When it became necessary to insert the intermediate jacks, this channel was burned out from one of the steel sleeve protected joints. Fabricated steel rings were inserted to bear against pipe joint faces, and jacks were mounted.

The intermediate jacks had a 48-in. stroke, powered by a hydraulic pump. As they opened up the joint between adjacent pipe sections, the opening was protected from sloughing ground by the 5-ft steel sleeve.

Under normal operations, the boring machine operator signaled the order to shove to the intermediate jacking station operator by telephone. The intermediate operator then used the forward jacking station to push the lead string of pipe ahead until told to stop by the boring machine operator. Then, by using a series of selective valves and signal lights, the intermediate operator shoved forward each successive string of pipe.

This excavating and jacking procedure made about 5 ft of progress in an eight-hour shift, or 15 ft in a three-shift, 24-hour day with an 8- to 10-man crew. During most of the work the job was on a seven-day basis.

Jacking operations were almost continuous. It took from 30 minutes to an hour to install a new section of pipe. And it took somewhat longer to install an intermediate jacking station.

The jacking operation would not have been possible without lubricating the outside of the pipe.

Primary injection of lubricant was made at the lead cutting edge. A thin coating was also applied as the pipe entered the tunnel.

But the major secondary point of lubricant application was about 65 ft from the jacking pit. Here a 36-in. dia hole was drilled directly over the pipe to serve as a lubricant reservoir. Finally, at various places along the pipe lubrication inserts were installed in holes drilled through the pipe walls for pressure lubrication. General procedure was to pump lubricant into these inserts during the time when an additional pipe joint was being positioned in the jacking pit.

The lubricant is a specially compounded drilling material prepared by Ken Corp. of Long Beach. It is designed for minimum absorption in the soil and for constant viscosity under varying pressures. It consists of: bentonite, water, crude oil and a jelling agent patented by Ken Corp.

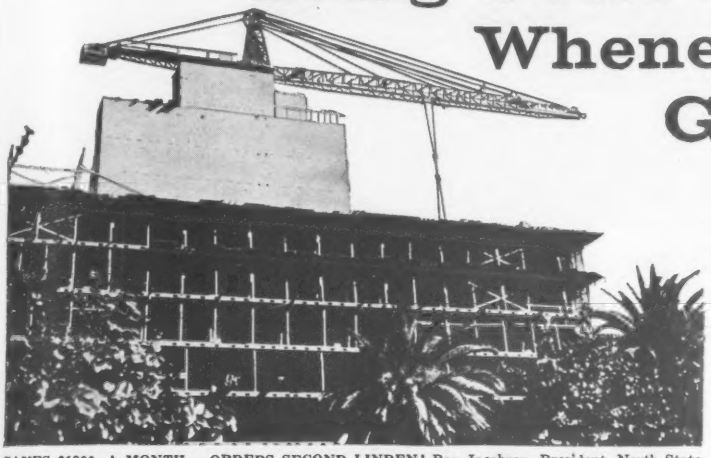
During the jacking process care was taken to prevent damage to the ends of the pipe. In manufacturing the pipe, the bottom or bell end was cast on a steel form to give it smoothness. The top or spigot end was hand finished for maximum smoothness. Then a ring of asbestos insulating material was applied to the inside of the bell end of each pipe joint. This material has the compressive strength and resiliency needed to take up irregularities in the concrete surfaces as a pressure of about 1,200 psi is exerted on the end.

Accurate steering of such a long length of pipe is of great importance. To accomplish this, Johnson Western used four "hog rods" that made an integral unit of the first four pipe joints. These rods were 6-in. channels bolted to the trailing edge of the first joint and to the leading edge of the fourth joint. Each rod was capable of being loosened or tightened by a series of five 1-in. high tensile bolts at the trailing edge of the rod. Strain gages mounted on the rods accurately measured the change in tension in the rods. Early experience in the work quickly developed the amount of strain change necessary for slight adjustments in direction.

Wayne P. Lill is city engineer for National City, Calif. Alfred V. Roberts is assistant city engineer and was responsible for structural design. James M. Montgomery of Pasadena, Calif., served as consultant.

The jacking project was conceived and supervised by L. J. Sullivan, president, and R. B. Zinser, vice president and chief engineer, of Johnson Western Constructors. W. J. Parks was project engineer and A. C. Hill was job superintendent for Johnson Western.

How Linden Climbing-Cranes Bring Costs Down Whenever They Go Up

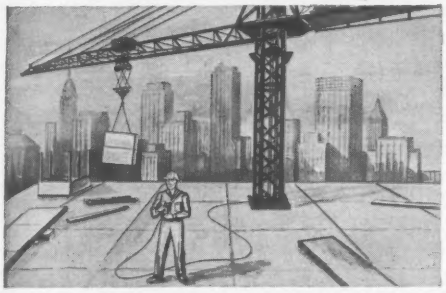


SAVES $1300. A MONTH — ORDERS SECOND LINDEN! Ray Jacobsen, President, North State Builders, Ltd., Menlo Park, Cal., writes: "Having completed my first project, an apartment house, and saved $1300. a month — ship me a second LINDEN. There was never a better piece of materials handling equipment!"

Stays on Top of The Job

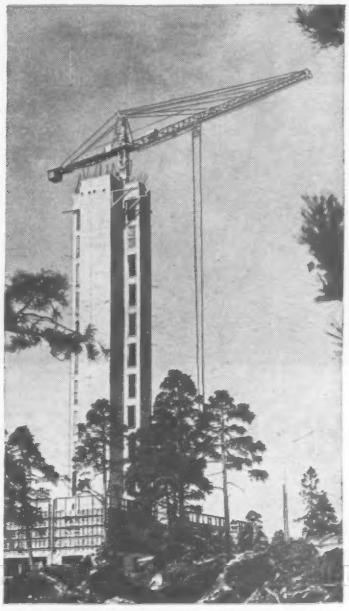
Raises Itself From Floor to Floor While Work Is In Progress

"The Sky's The Limit!"



Remote-controlled by one man from working deck with 3½ lb. electronic panel. He is free to move to any part of the job, and to assist in loading and unloading.

Unequalled where working space is limited. No street access necessary because the LINDEN works from the top... "goes up by its own bootstraps."



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There are 4 models — each priced at about **half the cost of comparable capacity cranes.** Experience has shown that, with ordinary usage, a LINDEN CLIMBING CRANE pays for itself within 2 years. Rental-purchase plan available. Factory trained service engineers available. Delivered anywhere in U. S.

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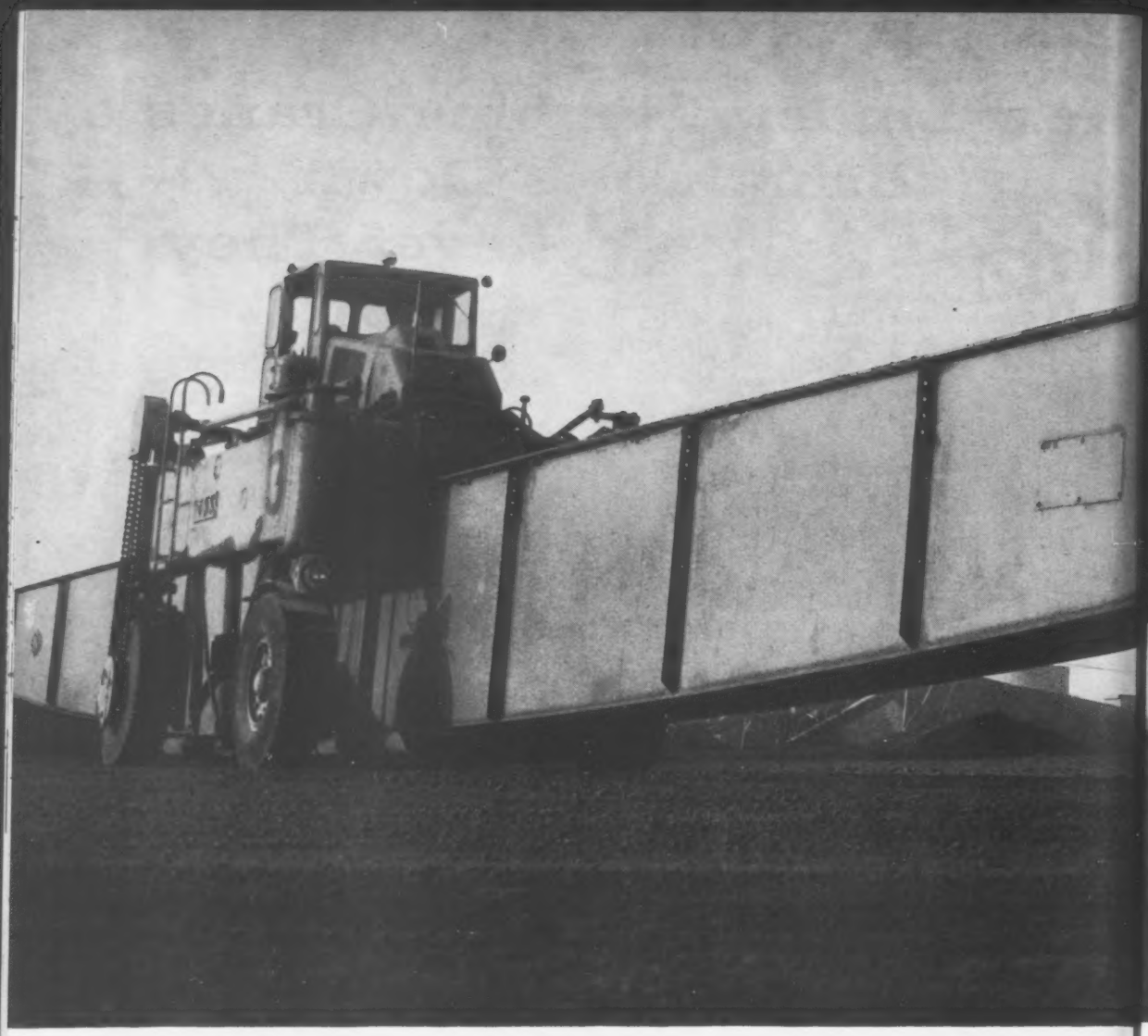

"We've installed 25 of the new lightweight, low-

... and maintenance records to date indicate

The Timken Roller Bearing Company is a long-time user of Hercules diesels. In fact, one of the Ross carriers purchased by the firm for a fleet now numbering 20 is powered with a Hercules diesel that has logged more than 17,000 trouble-free hours to date—with only normal preventive maintenance. With this kind of experience, the Timken Company was quick to investigate the new Hercules diesel line when it was released.

Some 25 of the new Hercules engines, ranging from three cylinder sizes to the large, six-cylinder, multi-fuel D-426, are installed in materials handling equipment serving the firm's Steel & Tube Division. Many of these engines have compiled service records of over 2000 hours, with negligible service expense. They give plenty of power for the job, too, even though many of them have replaced heavier, larger displacement diesels.

"If present indications are a guide," says Ed Gumpf, "these new Hercules diesels will be the best investment, in terms of engine-cost-per-hour-of-service, that we've ever made."

The new Hercules diesels, available in a range from 50 to 175 horsepower, are proving more economical to buy and less costly to own for many engine users.

For complete details, call the Hercules distributor near you or return the coupon, at right, to Hercules Motors Corp., Canton 2, Ohio.

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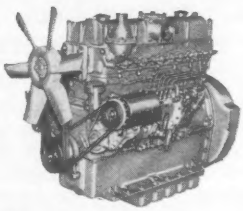
WATCH

cost Hercules Diesels in our equipment

they will save us money"

says Ed Gumpf, Supt. of Materials Handling, Steel & Tube Division, The Timken Roller Bearing Co.

Hercules D-426 Poly-diesel engine can burn diesel fuel, gasoline, kerosene, even JP-4, interchangeably.



HERCULES

WATCH HERCULES FOR THE 'NEW LOOK' IN ENGINES

Hercules Motors Corp.
Canton 2, Ohio

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"We've installed 25 of the new lightweight, low-

... and maintenance records to date indicate

The Timken Roller Bearing Company is a long-time user of Hercules diesels. In fact, one of the Ross carriers purchased by the firm for a fleet now numbering 20 is powered with a Hercules diesel that has logged more than 17,000 trouble-free hours to date—with only normal preventive maintenance. With this kind of experience, the Timken Company was quick to investigate the new Hercules diesel line when it was released.

Some 25 of the new Hercules engines, ranging from three cylinder sizes to the large, six-cylinder, multi-fuel D-426, are installed in materials handling equipment serving the firm's Steel & Tube Division. Many of these engines have compiled service records of over 2000 hours, with negligible service expense. They give plenty of power for the job, too, even though many of them have replaced heavier, larger displacement diesels.

"If present indications are a guide," says Ed Gumpf, "these new Hercules diesels will be the best investment, in terms of engine-cost-per-hour-of-service, that we've ever made."

The new Hercules diesels, available in a range from 50 to 175 horsepower, are proving more economical to buy and less costly to own for many engine users.

For complete details, call the Hercules distributor near you or return the coupon, at right, to Hercules Motors Corp., Canton 2, Ohio.

When it comes to building nuclear facilities . . .

Who Is Responsible for What?

By John M. Ruddy

Construction has a problem in providing large scale nuclear facilities, particularly power plants: The problem is in dividing responsibilities among the separate groups whose combined technical talents are required. In addition to the owner-operator, there are at present four major and distinct groups involved:

- Architect-Engineers
- Nuclear Consultants
- Equipment Manufacturers
- Construction Contractors

There is an inherent possibility of gaps and overlapping of responsibilities of these groups. This requires careful coordination, but most importantly it requires the maximum of guarantees from the only two groups properly capable of guarantees: the equipment manufacturers and the construction contractors.

The complex relationships in the nuclear field (see The Crazy-Quilt Nuclear Power Business, ENR Nov. 28, 1957, p. 21) complicate the definition of varying areas of responsibility and the specification of nuclear-mechanical-electrical system guarantees.

Since architect-engineers have the broadest and most general outlook, it should be retained normally by architect-engineer but may also act as consultant to equipment manufacturers on some projects. Performing professional service only, no guarantees are demanded of him.

Equipment manufacturer: Responsible for the detailed design and manufacture of various items of equipment and systems for interconnecting equipment. A single manufacturer should furnish and install complete systems between defined points so that materials, workmanship and specified performance for all systems and components can be guaranteed.

Construction contractor: Responsible for the usual detailed engineering required for shop drawings, he must guarantee materials and workmanship plus specified performance of equipment and systems. It is desirable for the equipment manufacturer to be a subcontractor to construction contractor in some cases.

There are, therefore, these general areas of responsibility during the planning, the design and performance specification, the detailed design and specification, the fabrication and construction, and finally the testing stages.

And once the fundamental division

There should be a precise description of the steam "out" and water "in" at this dividing line as to quantity, quality, rate, rapidity of control, etc. These factors, together with all other performance and detail specifications, would permit guarantees by the manufacturer of the steam generating system. Using these same data on steam and water as incoming and outgoing conditions for the prime mover-electrical generating system, the specification would be written to ensure that the electrical generating equipment manufacturer would be able to guarantee his output and other performance.

So that manufacturers bid on and supply equipment of equal quality, it is essential that the performance specifications cover completely all aspects of operations and maintenance.

The architect-engineer would specify in like manner all special equipment and minor mechanical and electrical systems for which normal factory guarantees are not available.

The remainder of the architect-engineer's specifications would be in the usual fashion, demanding of the construction contractor a guarantee of his work as to materials and workmanship only.

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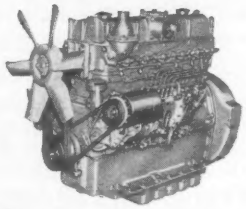

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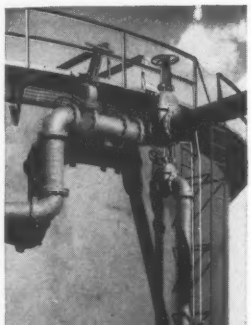

IN COATINGS

that reduce maintenance costs for builders, owners

When it comes to building nuclear facilities . . .

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Construction has a problem in providing large scale nuclear facilities, particularly power plants: The problem is in dividing responsibilities among the separate groups whose combined technical talents are required. In addition to the owner-operator, there are at present four major and distinct groups involved:

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- Nuclear Consultants
- Equipment Manufacturers
- Construction Contractors

There is an inherent possibility of gaps and overlapping of responsibilities of these groups. This requires careful coordination, but most importantly it requires the maximum of guarantees from the only two groups properly capable of guarantees: the equipment manufacturers and the construction contractors.

The complex relationships in the nuclear field (see The Crazy-Quilt Nuclear Power Business, ENR Nov. 28, 1957, p. 21) complicate the definition of varying areas of responsibility and the specification of nuclear-mechanical-electrical system guarantees.

Since architect-engineers have the broadest and most general outlook, it would seem natural and probably best that they assume the responsibility for decisions relating to the division of responsibility and establishment of guarantees.

Here is a broad outline of the spheres of responsibility for the four groups involved:

Architect-engineer: Responsible for the definition of responsibilities of the four groups; for the over-all design of the complete project; for performance and for specifications on items furnished by the equipment manufacturers; and for delineating the borders between guarantors in order to preserve over-all system guarantees. The A-E performs professional service only, with therefore no written, contractual guarantees.

Nuclear consultant: Responsible for the over-all nuclear system, its design, performance and specifications of all of the nuclear and related equipment. He should be retained normally by architect-engineer but may also act as consultant to equipment manufacturers on some projects. Performing professional service only, no guarantees are demanded of him.

Equipment manufacturer: Responsible for the detailed design and manufacture of various items of equipment and systems for interconnecting equipment. A single manufacturer should furnish and install complete systems between defined points so that materials, workmanship and specified performance for all systems and components can be guaranteed.

Construction contractor: Responsible for the usual detailed engineering required for shop drawings, he must guarantee materials and workmanship plus specified performance of equipment and systems. It is desirable for the equipment manufacturer to be a subcontractor to construction contractor in some cases.

There are, therefore, these general areas of responsibility during the planning, the design and performance specification, the detailed design and specification, the fabrication and construction, and finally the testing stages.

And once the fundamental division of responsibilities is established, it is the architect-engineer's job to ensure that the definite physical dividing lines between systems are accurately drawn so that there are neither gaps or overlaps, so that guarantees are complete and definitive.

The manufacturers of equipment should be specified as the installers of their complete systems, including all interconnections with other components. Where this is impossible for any reason, the systems not directly installed by their manufacturer at least should be installed under his supervision to keep responsibility intact.

Here's what is meant by physical dividing lines between systems:

The architect-engineer would decide with the nuclear consultant that the division of responsibility is, for instance, at the joints in the piping at the outside face of the radiation shielding walls for the main heat exchangers, which are between the nuclear boiler and the turbines. The nuclear consultant would engineer the complete steam generation system including all its sub-systems, specifying it mostly on a performance basis so that the equipment manufacturer would have latitude system design and fabrication.

There should be a precise description of the steam "out" and water "in" at this dividing line as to quantity, quality, rate, rapidity of control, etc. These factors, together with all other performance and detail specifications, would permit guarantees by the manufacturer of the steam generating system. Using these same data on steam and water as incoming and outgoing conditions for the prime mover-electrical generating system, the specification would be written to ensure that the electrical generating equipment manufacturer would be able to guarantee his output and other performance.

So that manufacturers bid on and supply equipment of equal quality, it is essential that the performance specifications cover completely all aspects of operations and maintenance.

The architect-engineer would specify in like manner all special equipment and minor mechanical and electrical systems for which normal factory guarantees are not available.

The remainder of the architect-engineer's specifications would be in the usual fashion, demanding of the construction contractor a guarantee of his work as to materials and workmanship only.

Thus, systems would be guaranteed as to performance from beginning to end by careful and explicit definition and specifications at proper dividing lines. Other items which are not integral parts of the system capable of being guaranteed from a performance point-of-view would be covered in the usual way for specifying construction work.

This same approach could be used for any project in which there is a division of engineering responsibility—as between the A-E and nuclear consultant here. Projects such as missile launching systems, radar screen systems, large sea water distillation plants may be examples.

The trend is definitely toward the architect-engineer as the prime representative of the owner, although at present there are still many arrangements of equal partnership between the A-E and the nuclear consultant.

The success of a professional arrangement depends, in the final analysis, on people. Development and training of people sufficiently broad to understand all phases of these projects is the key to solving construction's problem of providing the nuclear facilities the nation needs.

***John Ruddy** is chief engineer of the architectural planning division at Brookhaven National Laboratory, Upton, N. Y. His responsibilities have long concerned the responsibilities of contractors, A-E's, nuclear consultants and manufacturers on nuclear work.*

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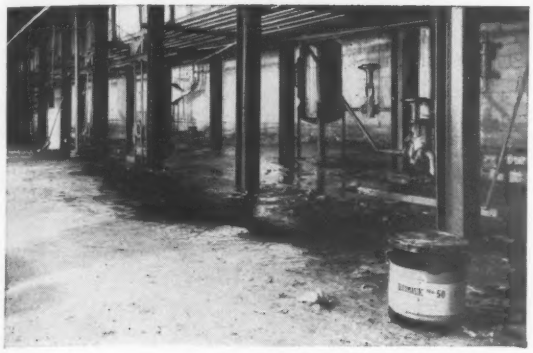

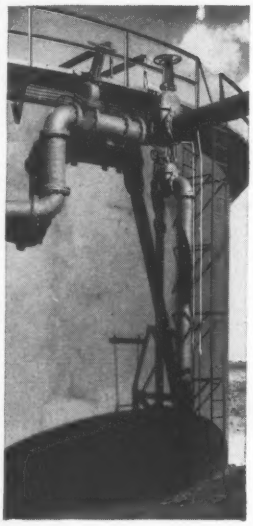

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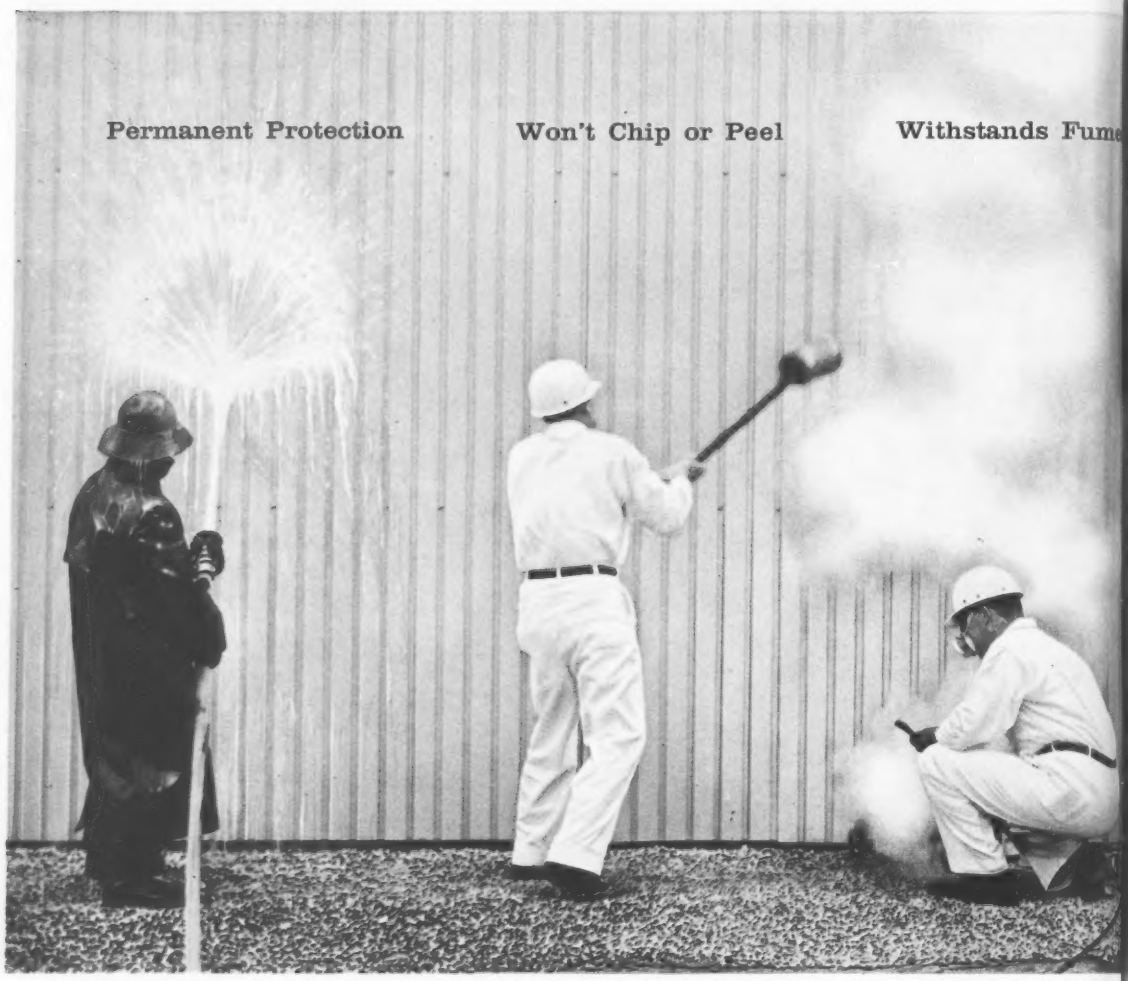

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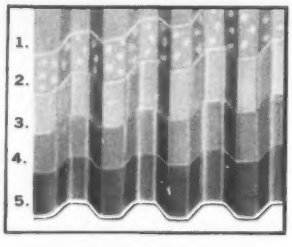

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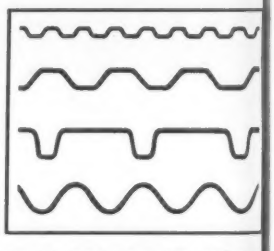

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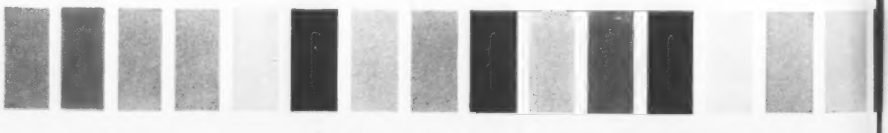

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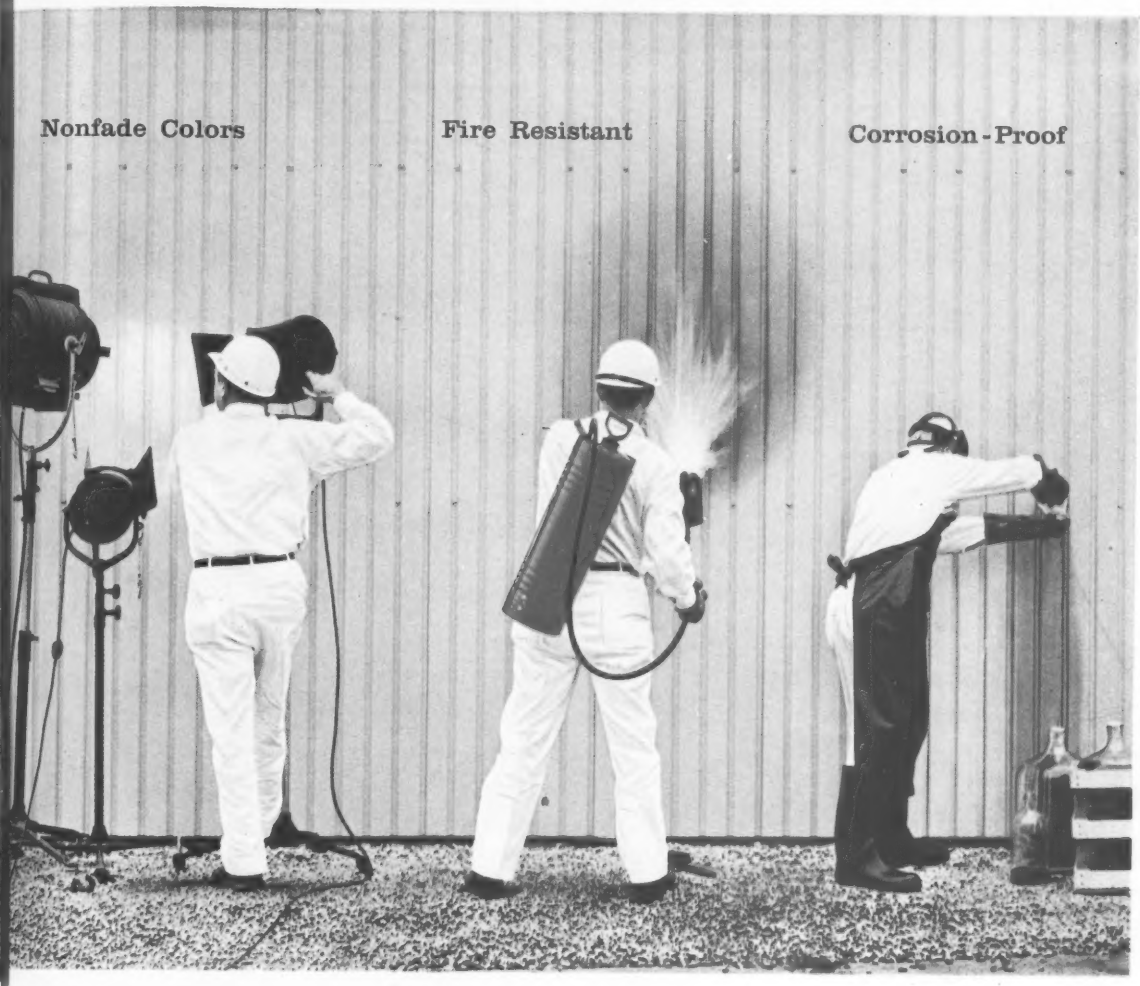

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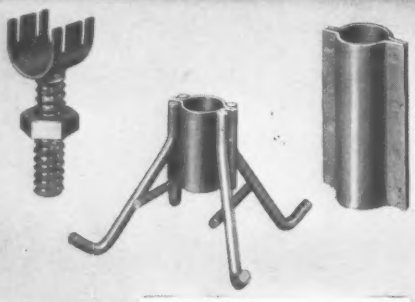
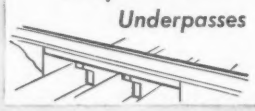
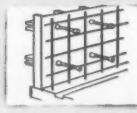


HEAVY-DUTY SCREED SUPPORTS



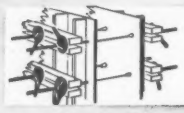
Overpasses and Underpasses

THREADED COIL TIES



Engineering Structures

TILT LOCK CLAMPS



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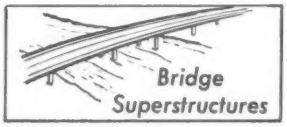

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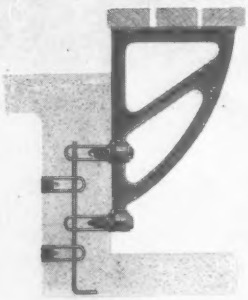

RISER-FRAMES

Stadiums and Grandstands

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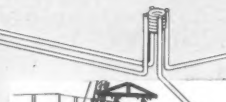
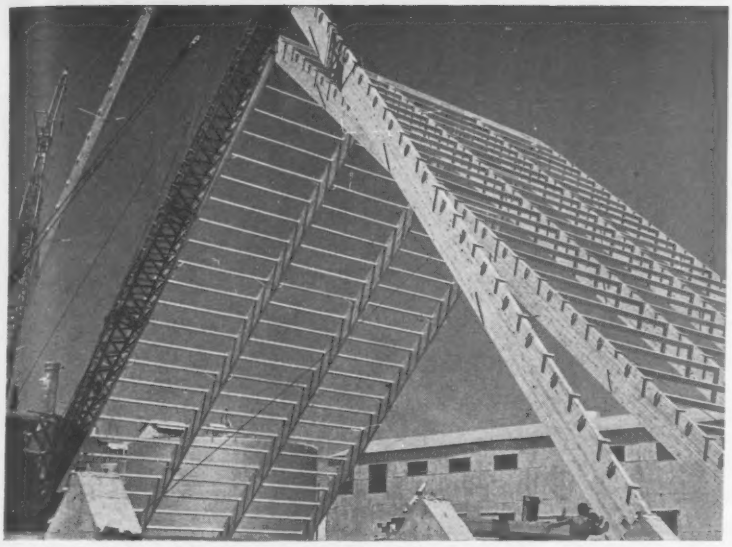


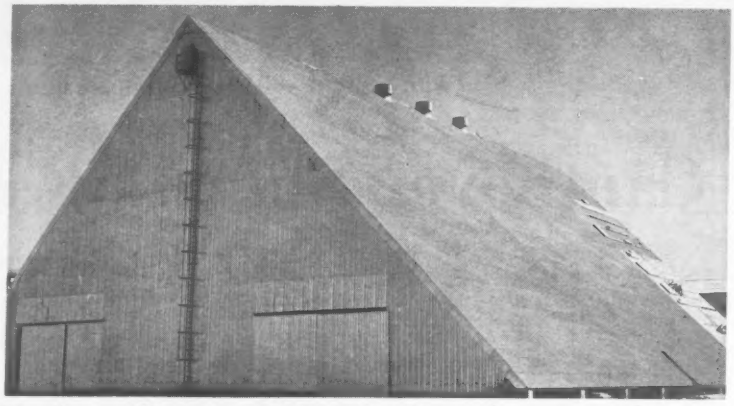
Tilt-Up Work

SNAP TIES

Ordinary Foundations



100-ft "glulam" beams, raised by 25-ton cranes, form A-frame.



Warehouse shape is modeled after form of a sugar pulp stack.

Tailored Shelter for Sugar Pile

A warehouse for the Holly Sugar Corp., Tracy, Calif., is built in the shape of what it shelters—a pile of dried sugarbeet pulp.

A stack of pulp settles at a 45-deg angle, so the pulp building is engineered as a simple A-frame, permitting stacking up to a combined belt and screw conveyor under the ridge line.

The structure measures 140 x 180 ft, is 73 ft from the floor to peak, and features glue laminated beams.

The 100-ft long "glulam" beams, spaced 20 ft c-c join at the ridge with steel plates and bolts. Lateral thrust is absorbed by 11-ft deep concrete footing pads, 18 in. wide and 5-ft long. Beam ends rest in steel yokes on each pad.

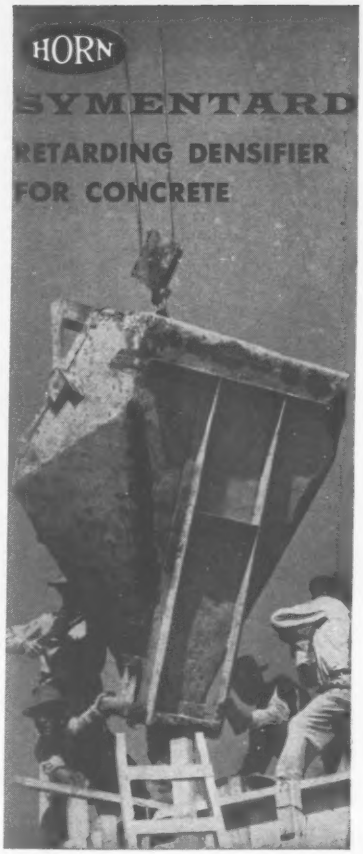
Two 25-ton cranes hoisted the beams in pairs and provided support while the workmen bolted them in place.

Purlins of 4 x 8-in. lumber complete the roof framing. They are attached to the beams 4 ft c-c with metal hangars. Sheets of ¾-in. plywood are nailed over the framing. The plywood edges are tongue-and-grooved with joints glued to form a solid skin. A roof of asphalt shingles covers the unpainted panels.

The outside skin of the building is corrugated metal; the inside is hardboard paneling.

Cost of the building was $3.50 per sq ft of floor area, or $.09 per cu ft. Total cost of the building was $120,000. The structure has a capacity of 3,800 tons of pulp.

Alan McKay, consulting engineer for Holly, designed the structure. Berkeley Plywood Co., San Leandro, Calif., was the contractor.



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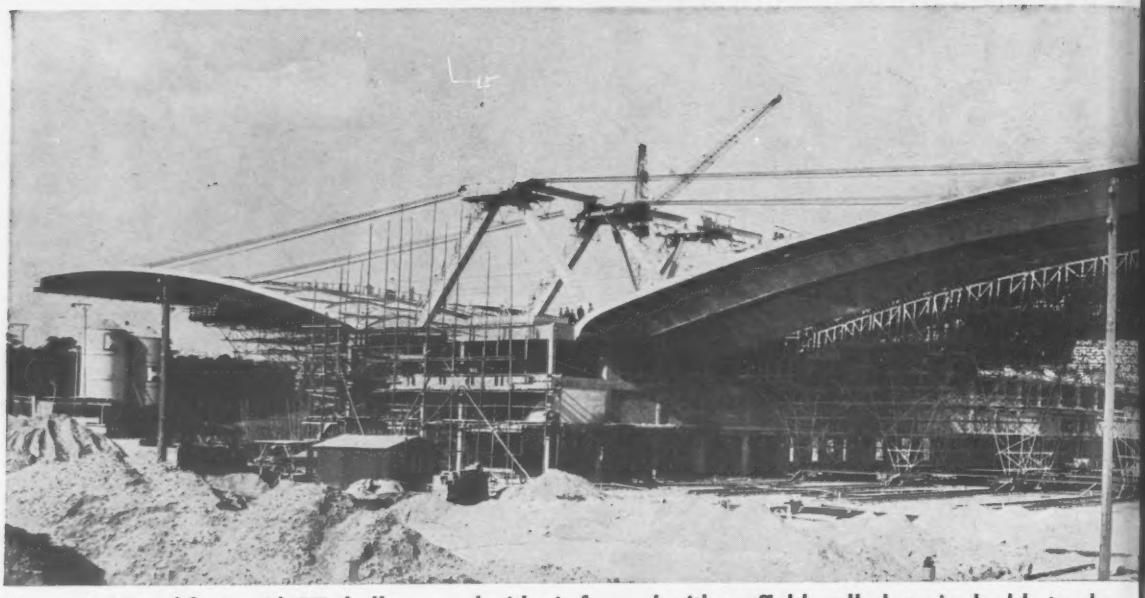
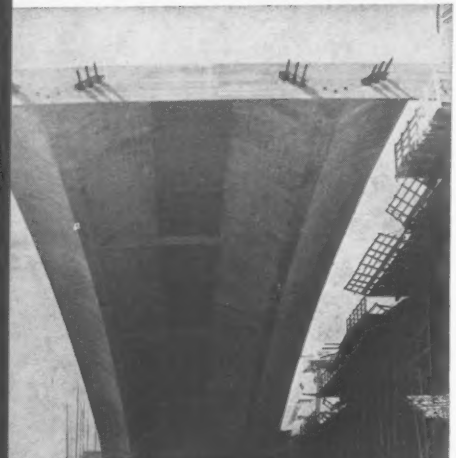


Hangar at Frankfurt, with 17 shells on each side, is formed with scaffolds rolled on six double tracks.

Concrete Cantilever Shells Form a



Shells cantilever 150 ft.

By next month, Lufthansa Airline's B-707 long-distance jets should be housed at Frankfurt's Rheinmain Airport beneath a double-cantilever, cable-suspended roof of prestressed concrete.

Over-all, the hangar reaches 540 ft from end to end, 440 ft from cantilever tip to cantilever tip. Roof shells cantilever 150 ft from the center core, allowing for six super jets (three to a side) or ten medium-range planes.

Before final roof design was selected for the new maintenance hangar, architect George Petry took time to inspect types planned or under construction in the U. S., including Idlewild International Airport and TWA's new maintenance hangar at Los Angeles International Airport.

The planners at Frankfurt Airport decided that although the weight of a cable-supported, prestressed concrete girder roof would be greater than a welded-steel truss and metal-deck roof, the prestressed concrete design had the edge since it would be slightly cheaper to erect, and its construction materials would be more readily available.

The hangar's central core is a three-story-plus-basement box-frame structure of reinforced concrete columns divided into four individual sections by expansion joints. This frame does three jobs:

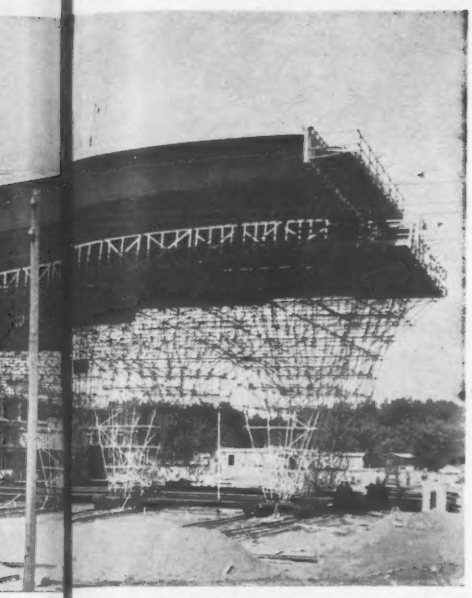
- Supports the core roof.
- Absorbs the stress of the roof cantilevers.
- Carries the masts for the suspender cables.

The cables run from anchor sockets located 182 ft out along the roof girders, over the 40-ft high masts to cable anchor points 182 ft out on the other side. Instead of using the central core as back-stay anchorage for the suspender cables, the designers gave preference to the opposite roof sides as anchorages. Design stress on the suspension cables is 89 tons with the ultimate stress on the strands at 120 tons.

At the central core, the cantilever sections of the roof are connected over so-called "soft-metal" pins designed to compensate for expansion and contraction due to temperature changes. The pins are 33½ ft above the floor.

Shell depth in the curved sections of the roof is 3¼ in. thickening out to 4¾ in. at drains and at the frames for the skylights. Thirteen of the shells on each side of the roof are skylighted, only the shell pairs at each end being left blank.

The shells at each end of each side of the roof structure have not been provided with skylights for three reasons: (1) they have to support the tops of the end curtain wall columns, (2) they have to transfer lateral wind stresses to



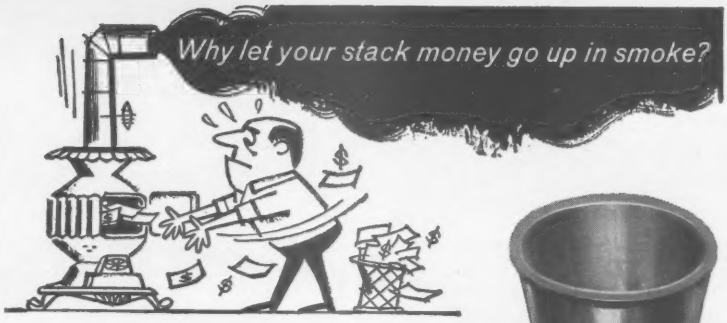
a Hangar

the central core, and (3) they have to assimilate the horizontal thrust originating in the remaining shells. Extra bracing has been provided in each of the end shells. Expansion or control joints between the various shell sections of the roof have been omitted completely as they would only complicate the design of the door runners.

On each side of the $3-million hangar, railways suspended under the cantilever sections of the roof carry a five-ton crane for lifting engines and other unwieldy jet-plane parts. The full load of 21-tons made up of crane and crane runways is distributed over two adjacent roof shells no matter what the position of the crane on its runways.

Six doors along each side of the hangar are each 88 ft wide. Three door runners along the roof spandrel plus three-piece base tracks allow two-thirds of the available door area to be open at any one time. Allowing for vertical movement at the shell ends, the doors are designed for a maximum 2.95 ft (90 cm) movement.

Consulting and contract management was by Frank Turter Auflau A.G., Philip Holzmann, A.G. was the contractor. Both are Frankfurt firms. Prof. A. Mehmel, Darmstadt Engineering College, was consultant and checker for concrete shell design.



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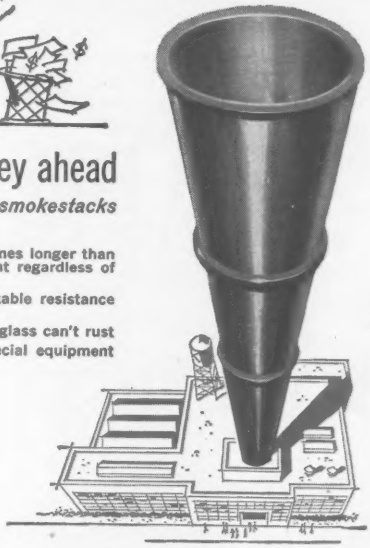

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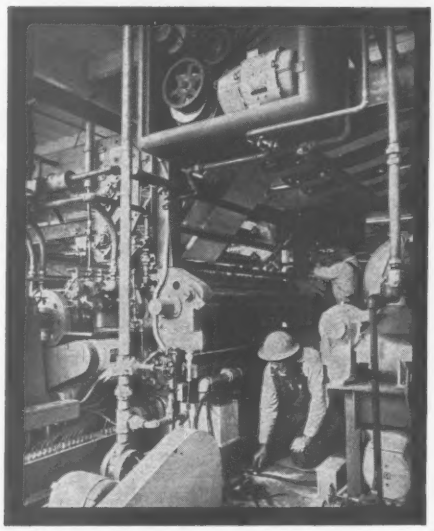

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How to change bridges in the middle of a stream

Since 1888, a swing span carried trains over the south channel of St. Mary's River at Sault Ste. Marie, Michigan. It rested on an island that presented a constant navigational hazard. ☐ In 1957, the Corps of Engineers and the Sault Ste. Marie Bridge Co. decided to eliminate the hazard by removing the relic and the island and building a modern lift span. But neither rail nor water traffic could be interrupted, so both construction and scheduling problems were involved. ☐ Work began in the fall. First, the swing span was bob-tailed on both ends, permitting towers to be built directly over the existing abutments. The towers were completed by mid-December, when the river froze over and halted water traffic. Then the swing span was swung across the river, a falsework tower was erected over the pivot, and the lift span was built **piggy-back** about 65′ above the swing span. This part of the job was completed before the mid-April thaw when river traffic resumed. ☐ With the lift span completed, we were given a weekend to place the swing span perpendicular to the river and hack out enough of its mid-section to permit the lift span to be lowered to track level and accommodate rail traffic Monday morning. This was accomplished in round-the-clock operations. The new bridge features a 369′3″ long lift span, supported by two 177′ towers. The island will be ripped out by mid-year, and the channel deepened. Write for information on our construction services, or call our contracting office nearest you. ☐ Bridge owned by the Sault Ste. Marie Bridge Co., which is jointly owned by the Canadian Pacific Railway Co., the Soo Line Railroad, and the Duluth, South Shore and Atlantic Railroad. Bridge designed by: Howard, Needles, Tammen & Bergendoff, Kansas City, Mo.

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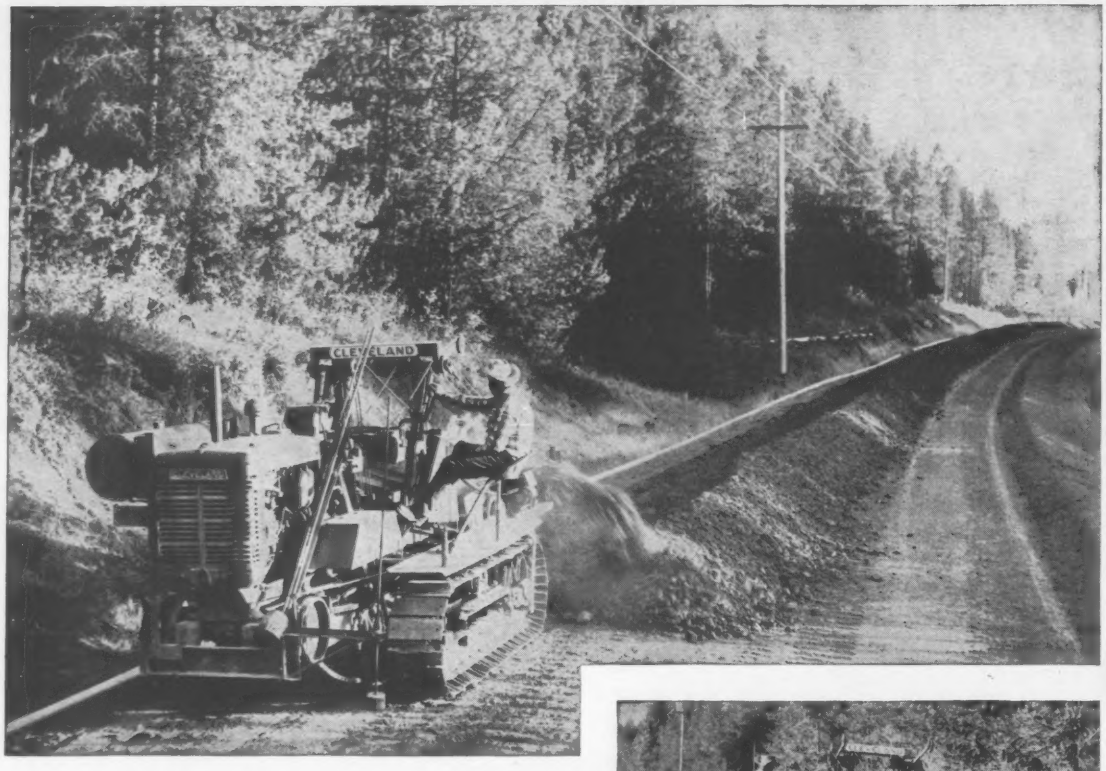
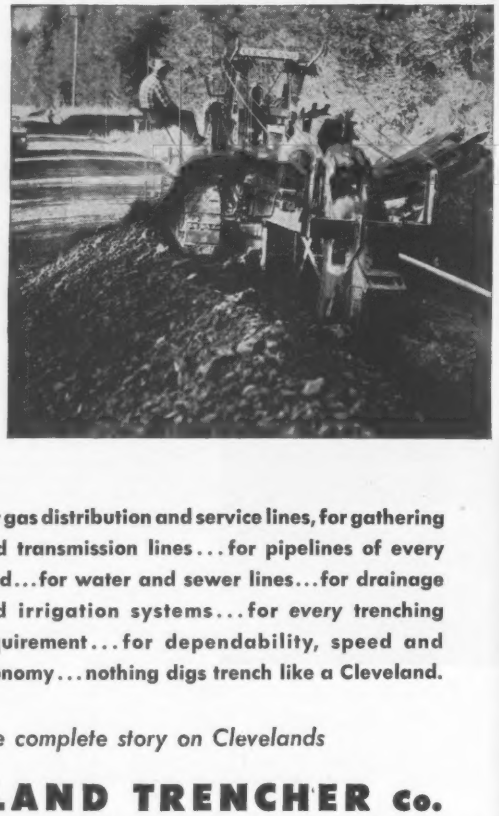


Cleveland 140 digs 38-mile Idaho gas extension



Massart Construction Company of Spokane, Wash. used a Cleveland 140 to dig a 38-mile gas line eastward from Moscow, Idaho to serve a new refractory at Boville, another brick plant at Deary and smaller users along the line. The Cleveland dug the line 40 inches deep for 4 and 6-inch pipe at a rate of better than 2 miles per day.

Typical of the entire Cleveland Trencher line, the 140 provides over 30 non-slipping digging wheel speed-and-power combinations—a choice that gives maximum trench production in all soils and terrains with greatest economy for every type and size of digging within its range.

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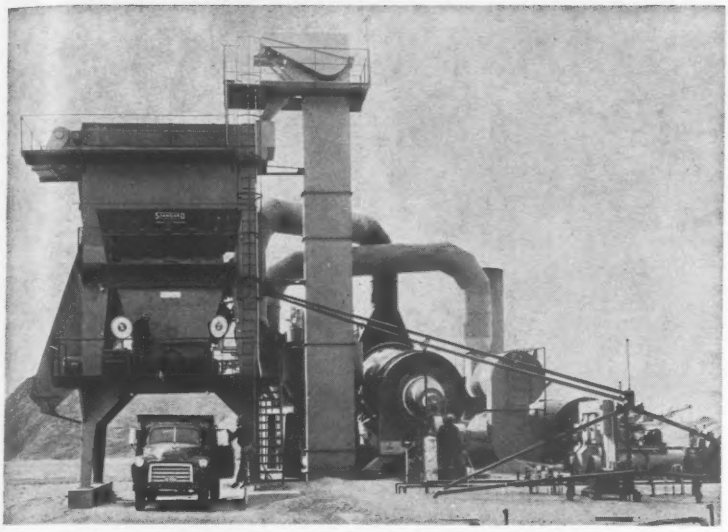


Asphalt Plant Has 2-Ton Capacity

The Model R-M 8000 is an asphalt plant with 8000-lb batch capacity. It is equipped with the Standard super-lift dryer. The dryer is fitted with saw-tooth lifters. It is a completely self-contained package with individual gear-motor power.

The plant features a heavy-duty type "S" mixer of heavy welded steel one piece construction. The curved surface is lined with one inch cast alloy sectional wear resistant plates. Plants are available with a cyclonic wet washing system.

Also available is Standard Simplex finger-tip batching control, with instantaneous cut-off and positive mix control. STANDARD STEEL CORP., ROAD MACHINERY DIV., 5001 S. BOYLE AVE., LOS ANGELES 58, CALIF.

Valves Have Visual Check

A new line of stainless steel bleeder valves permits visual check of bleeding or purging of hydraulic lines while the pump or system is in operation, according to the manufacturer.

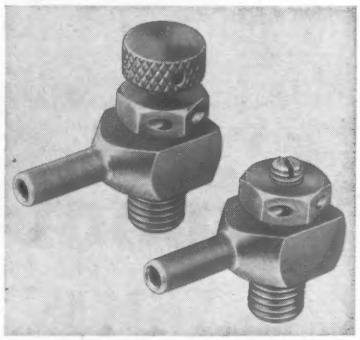
Featuring discharge port that swivels 360 deg for directional control of flow, these valves can be used with any high-pressure hydraulic system to eliminate fire hazards and afford maximum safety for operating personnel.

For visual check of bleeding or purging, a clear plastic tube may be slipped over the discharge nozzle.

This feature eliminates splatter and mess and makes the unit suitable for handling flammable, corrosive, and toxic fluids.

The bleeder valves are available with either a knurled knob or slotted bleed screw, making them adaptable for a variety of applications.

Constructed of 303 and 416 stainless steel, the valves resist burst pressures above 14,000 psi and can be used with all compatible fluids, the maker says.



Temperature range is from −65F to +275F. Three sizes are available with $\frac{1}{16}$-24, $\frac{1}{8}$-24, and $\frac{1}{16}$-20 UNF mounting threads. The height above mounting surface for slotted-screw unit is $\frac{3}{32}$ in.; the hand-knob unit is $\frac{5}{32}$ in. Safety wire holes are provided. FLUID REGULATORS INC., 313 GILLETTE ST., PAINESVILLE, OHIO.

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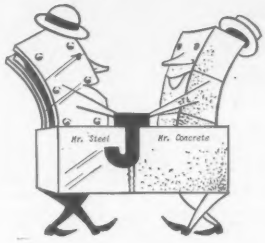

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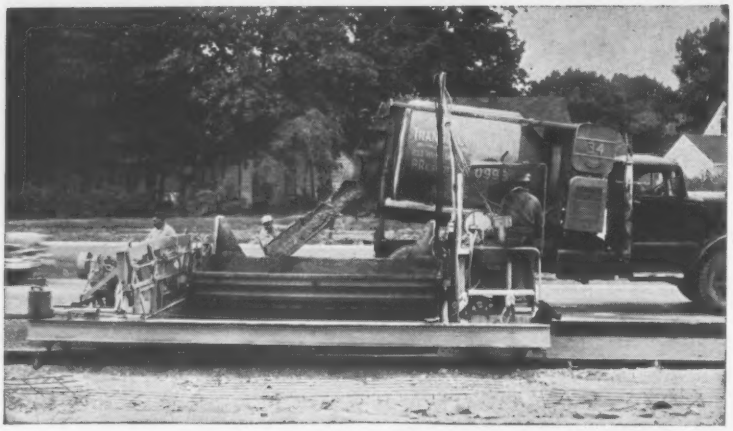

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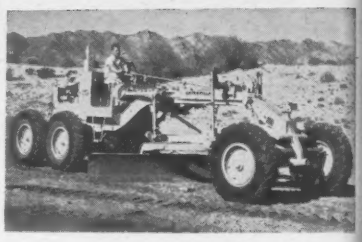

Improved Cat Graders Range From 85 to 115 hp

Three improved models of motor graders are the No. 112E, No. 112F and No. 12E.

The No. 112F is powered by a compact four cylinder diesel engine rated at 100 hp. Horsepower of the No. 112 Series E has been increased to 85, and the No. 12E is rated at 115 hp.

Both the No. 112E and No. 112F incorporate the Caterpillar oil clutch, improved blade controls, a one-piece transmission and final drive case, and dry-type air cleaner. Feature of the new, compact diesel engines is said to be increased productivity resulting from improved torque rise characteristics.

Travel and control speeds of the No. 112F are 5% faster than those of the No. 112E. Control speeds on the No. 112E are the same as on previous models, but travel speeds are slightly increased.

Positive assurance against moldboard creeping is provided by a new control lock, and smoother control lever engagement results from adoption of a new two-tooth jaw clutch on both the No. 112E and the No. 112F, according to the manufacturer.

All-weather in-seat starting is provided on all three machines by a newly designed gasoline starting engine. An interconnected lubrication system allows the starting engine to warm diesel engine oil prior to starting of the diesel. Exhaust from the starting engine is used to warm diesel intake air.

A 24 volt direct electric starting system is available as optional equipment. CATERPILLAR TRACTOR CO., PEORIA, ILL.

Crawler Crane-Excavator Can Hoist to 9 Tons

The Model 14-B is a fully convertible, crawler mounted crane-excavator. As a crane, it is rated up to 9-ton capacity and is available with booms from 25 to 80-ft long and boom-jib combinations up to 85 ft. As a hoe or shovel, it can be equipped with a ½ or ⅜-yd dipper; as a dragline-clamshell, it handles buckets ranging up to ¾-yd.

Crawler mountings offer a choice of (*New Products continued p. 60*)

New WHITE Model 6264 chassis for use with the mixer or dump body of your choice.

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This new WHITE 6264 boosts allowable payload in a majority of states —by thousands of pounds *more* than conventional trucks!

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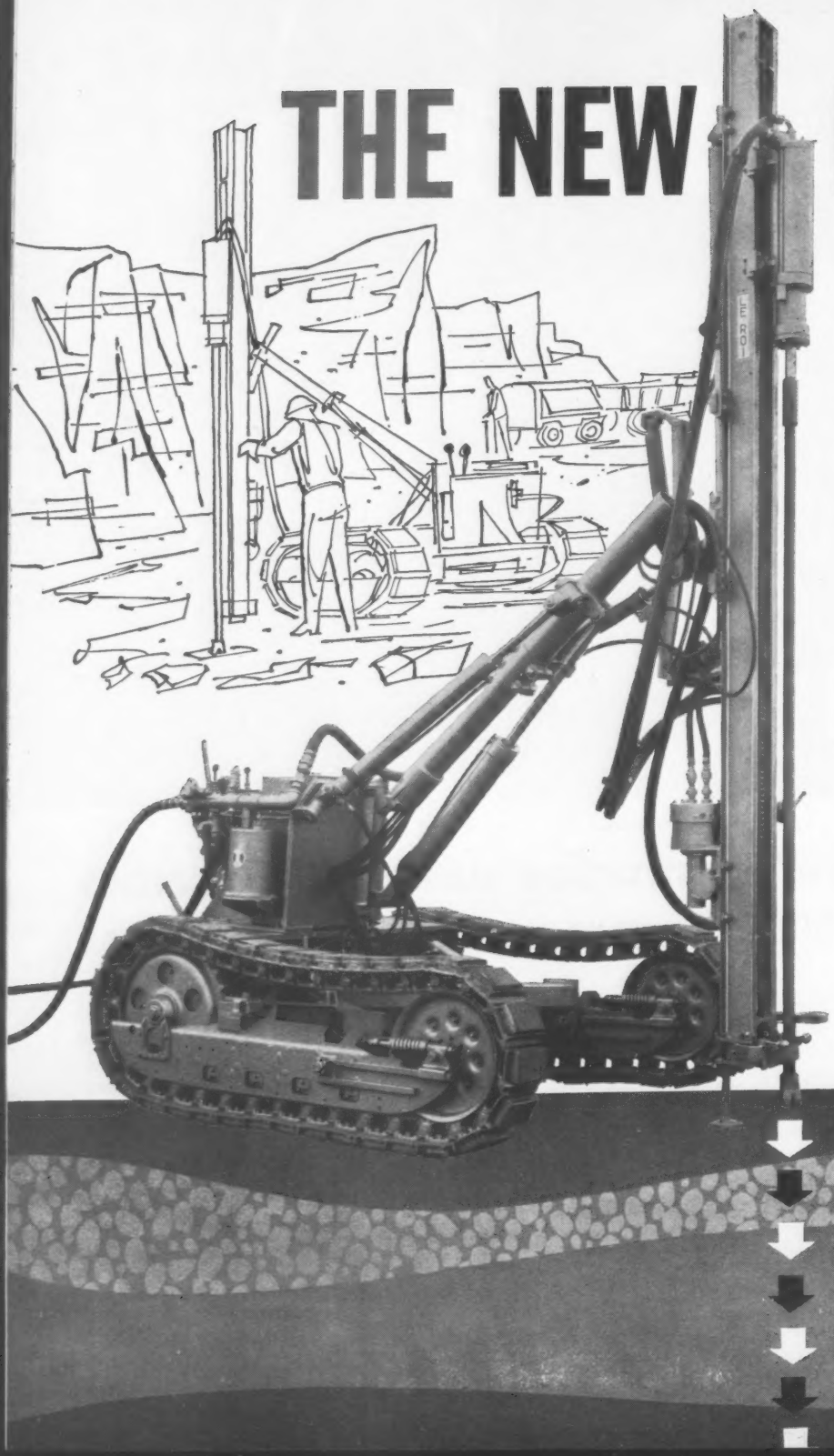

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TRAC-NEWMATIC

Here's Le Roi's brand-new, hardworking crawler drill — The Trac-Newmatic.

The Trac-Newmatic carries a big 5-inch drifter on an extra-sturdy air-powered feed shell... all mounted on a hard-lugging crawler that can pull a 600 rotary along with it over rough terrain.

The 5-inch drifter features a striking-bar design that efficiently squeezes every ounce of power out of the available air ... minimizes leakage and blow-by... drills 4-inch hole fast. What's more, the drifter has forward, neutral, and reverse rotation to assure fast driving, easy extracting, and speedy steel-uncoupling or coupling.

An air-motor driven hydraulic pump is used to quickly position the feed shell for breast- or lift-hole drilling either straight ahead or over the tracks to give a wide drilling pattern from a single location. A standard model with hand-operated hydraulic pump to raise and lower the boom is also available.

Tramming is easy, too... two hefty 7½ hp reversible air motors give the Trac-Newmatic plenty of power, while the oscillating tracks permit tramming or parking even on irregular terrain. Controls are mounted for both convenient operation and good visibility, and a "deadman" feature anchors the unit in place when the tramming levers are released.

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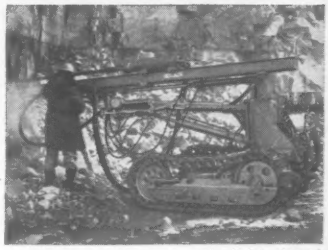

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tread widths from 16 to 24 in., reversible treads, and a single roller path for lateral flexibility. For heavy-duty excavation or crane work, the crawlers can be augmented by four screw-type jack outriggers.

The unit has an improved ball bearing swing circle, which requires no field adjustment. Components such as the swing circle, hoist shafts, transmission shaft and horizontal swing shaft are unit assemblies. Manual controls for the upper works are combined with air controls for steering clutches and brakes plus quick-shift spline-type clutches.

Incorporated are large-capacity, identical main clutches (with interchangeable parts); identical interchangeable main drum brakes; and swing brake plus independent air controlled positive house lock. Other features include independent boom hoist and a choice of gasoline power with direct drive or such optional power combinations as gasoline engine with 3-speed gear box or torque converter, high altitude engines, or diesel power with direct drive. BUCYRUS-ERIE CO., SOUTH MILWAUKEE, WIS.

Six-Wheel Diesel Trucks Designed for Hard Service

Two six-wheel diesel trucks (B-61SE and B-613SE) are said to be especially designed for heavy-duty service over rough terrain and in unusually severe conditions.

The B-613SE is powered by Mack's turbo-charged ENDT 673 diesel engine which develops 205 hp at 2100 rpm. The B-61SE offers a naturally aspirated version of the same engine developing 170 hp.

The frame, cab and entire front end and sheet metal of these trucks are reinforced for heavy-duty service.

Each unit has a balanced bogie featuring cast steel housings and a 55-in. wheelbase permitting the use of 24-in. tires. MACK TRUCKS, INC., PLAINFIELD, N. J.

High Efficiency Claimed For Hydraulic Winch

Model CL hydraulic winch has an over-all efficiency of 70% compared with 35% for some conventional winches, says the manufacturer.

The CL's 12,000-lb capacity can increase to 15,000 lb with higher hydraulic pressure. Designed to handle $\frac{7}{8}$-in. or $\frac{1}{2}$-in. cable, it can adapt to other sizes. The drum holds 1,000 ft of $\frac{1}{2}$-in. cable. BRADEN WINCH DIVISION, MOTOR PRODUCTS CORP., BROKEN ARROW, OKLA.

ALPHA

BETTER CONSTRUCTION THROUGH
BETTER USE OF CEMENTS

news and notes from the field

Overcoming the Problems of Hot Weather Concreting

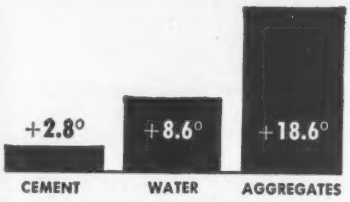
Hot weather can be made to work *for* you in concreting—if certain precautions are observed during placing. The dangers of inadequate preparation before placing, high MIX temperatures and poor curing protection should be understood and controlled.

Effects of High Temperatures

High temperature accelerates the setting time of concrete and promotes rapid evaporation of moisture. The setting time is based on mix and curing temperatures of 73°F. As the temperature rises the setting time accelerates. When the temperature of the concrete is allowed to climb too high, there is danger of "quick set" and permanent strength damage.

What causes High Concrete Temperatures?

The temperature of fresh concrete is affected by the temperature of the materials and the mixing conditions. Take an average five bag mix and increase the temperature of each ingredient 30°. The graph below shows how much each affects the concrete temperature.



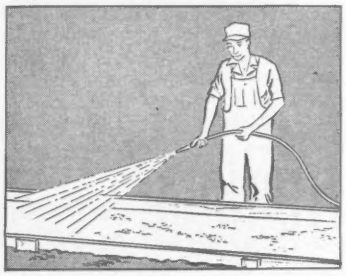
What Happens When Temperature of Fresh Concrete Runs Too High

- **Permanent strength reduction**
- **Early stiffening or quick set**
- **Increased water requirements**
- **Increased probability of cracking**

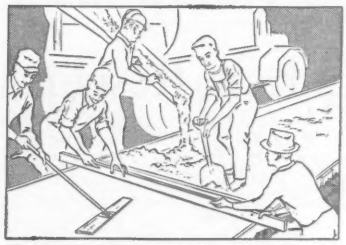
Ways of Reducing Mix Temperature:

1. Sprinkle hot aggregate stock piles with hose or fog spray.
2. Apply fog spray to aggregates or conveyor belts.
3. Use crushed ice in the mix replacing water—pound for pound.
4. Avoid stock-piling aggregates directly in the sun.
5. Protect mix-water storage and lines from direct sun.
6. Avoid the use of strength accelerators in hot weather.

Tips For Best Results



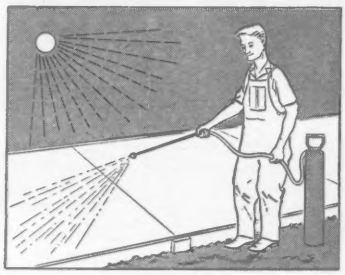
1. Subgrade should be damp (not muddy) so it will not absorb water from concrete.



2. Have adequate help available to handle concrete rapidly.

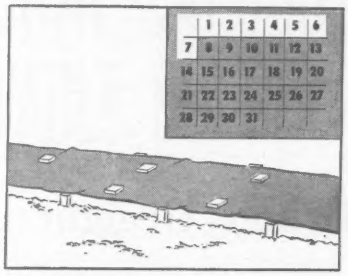
3. Discharge MIX as soon as possible after proper mixing.

4. In extremely hot weather it may be necessary to shade concrete or use wet coverings until final finishing can be completed.



5. In hot dry breeze erect wind break or use fog nozzles on upwind side of fresh concrete.

6. Start curing operations as soon as concrete has set enough to avoid surface damage.



7. Cure concrete for at least 7 days where durable wearing surface and strength are important.

8. Keep test cylinders shaded and damp until they are ready to be sent to laboratory after 24 hours.

Reprints Available

If you would like free reprints of this helpful information on Hot Weather Concreting, contact your local Alpha representative or the Alpha Portland Cement Company, Easton, Pa.

ALPHA
PORTLAND CEMENT COMPANY
Alpha Building, Easton, Pa.

Sherman H. Serre

Frank R. Creedon

V-P's Promoted at M-C&S

Two promotions complete recent top-level changes in the construction department of Merrit-Chapman & Scott Corp., New York City.

Reported earlier were the retirement of William Denny and the promotion of Myles C. McGough to replace him as executive vice president in charge of construction (ENR May 5, p. 22).

To complete the changes: Sherman H. Serre has been elevated to senior vice president of the construction department and Frank R. Creedon moves up to vice president.

Mr. Serre will continue as head of Merrit's Great Lakes Construction Division with headquarters in Cleveland, Ohio, and also will be responsible for all Merrit dredging operations.

He has been with the company since 1925 and has been in charge of Great Lakes construction operations since 1937. He was elected resident vice president in 1947 and was named M-C&S vice president in 1952.

Mr. Creedon joined M-C&S in 1955 and has been serving as construction manager. Currently under his direction are two key portions of the Niagara Power Project (ENR Mar. 10, p. 30).

Prior to his association with M-C&S, Mr. Creedon was Director of Installations for the Defense Department. In 1944-45 he was resident general manager for Stone & Webster Engineering Corp., New York City, for the construction of the atomic energy plant at Oak Ridge, Tenn. Subsequently, he was manager of design and construction for General Electric Corp. during the erection of the AEC installation at Hanford, Wash.

Bridge Designer Andrew Resigns

Charles E. Andrew has resigned as chief consulting engineer for the Washington Toll Bridge Authority. His resignation became effective last week. The 76-year-old bridge designer offered "personal reasons" and the "press of other business" as factors in his decision to resign.

He had been relieved of responsibility for the storm-tossed Hood Canal pontoon bridge several months ago (ENR Mar. 17, p. 17), but had continued to direct other projects for the Toll Bridge Authority.

His retirement from public work closes a distinguished career, which began in 1907 when he took a job as city engineer at St. Johns, Ore. In 1927 he became California state bridge engineer and from 1930-38 he was principal engineer for the San Francisco Bay Bridge. He joined the Washington Toll Bridge Authority as a consultant in 1938.

Mr. Andrew was instrumental in planning the first floating bridge across Lake Washington, completed in 1940 (ENR Feb. 1, 1940, p. 50). A high point in his career was his work on the second Tacoma Narrows Bridge, which has withstood 75 mph winds without a wiggle after the first collapsed in a wind half that strong (ENR Nov. 14, 1940, p. 1).

Mr. Andrew also designed the second Lake Washington Bridge, for which a contract is now pending (ENR May 12, p. 26).

Retirements

Ralph B. Dibble, assistant to the chief engineer of Michigan's highway department, has retired after more than 39 years of service to the state.

Martin Holmes has retired after 30 years with the U. S. Army Corps of Engineers. For the past ten years, he has been assistant chief of the Technical Engineering Branch, South Pacific Division.

David H. Williams, Jr., president of the Cleveland architectural firm, George D. Mason & Co., has retired. He was the award winning designer of Detroit's Masonic Temple and Central Woodward Christian Church.

Joseph H. Miller has retired as chief of operations of the Memphis District of the Corps of Engineers. During his 35 years with the Corps he has become recognized as an expert on flood control on the Mississippi River.

Willard O. Wilcox has retired from the New England Division, Corps of Engineers. During the latter part of World War II, he was chief of the planning branch of the Alaska District on many military installations.

Carlos A. Weber has resigned as chief engineer for the Michigan State Highway Department to go into private business. Since 1957, he has also been chairman of the design committee of the American Association of State Highway Officials.

Arthur T. Larned has retired as associate consultant with Ebasco International, Inc., New York City. He is known for his accomplishments in hydroelectric plant design.

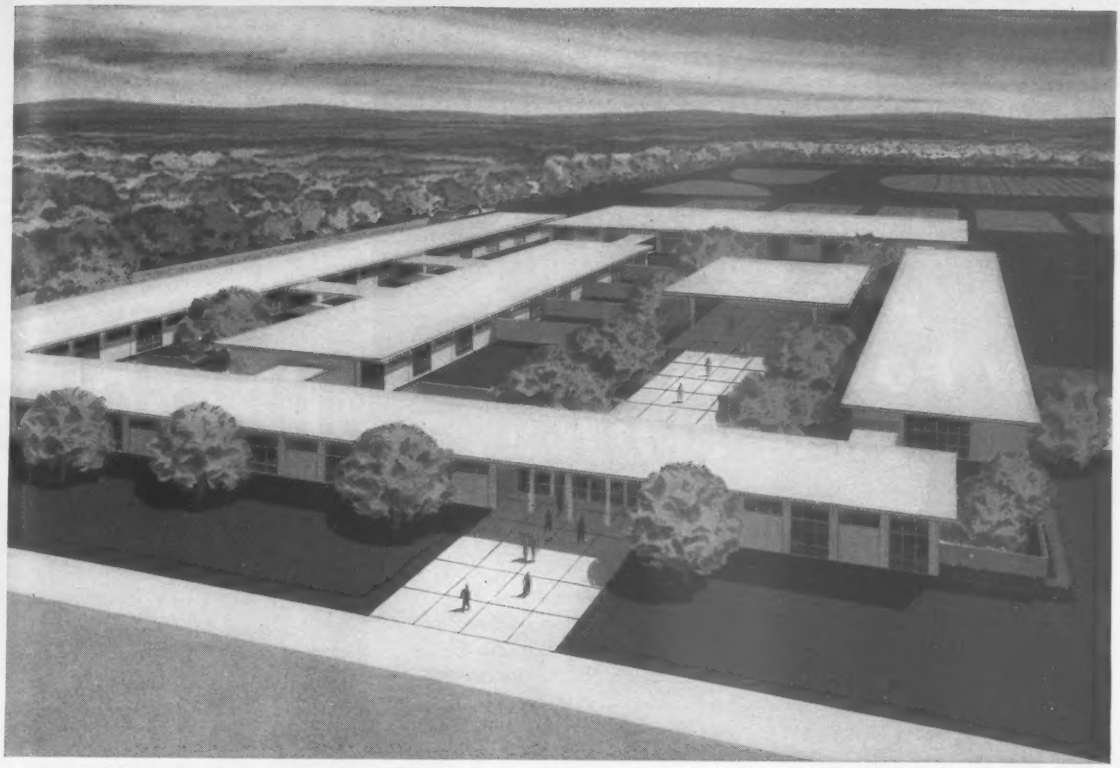
Brig. Gen. William Whipple, Southwest Division Engineer in Dallas, will become a civilian at the end of July, bringing to a close a 30-year career with the Corps.

Albert P. Boysen, for the past 14 years Chicago district engineer for the American Bridge Division of U.S. Steel Corp., has retired. He is a director of the Chicago Regional Planning Association, and a past president of the Western Society of Engineers.

Frank W. Cawthon, 35-year veteran of the state highway department of Texas, has retired as district engineer in Dallas.

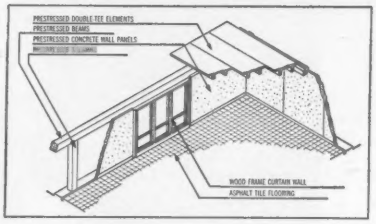
Lowell F. Schaeublin has retired from the Ohio Highway Department where he has been deputy director of right-of-way.

Clifford L. Mutch has retired after 33 years of service with the Bureau of Reclamation. He directed the construction of Bonny Dam in Colorado and Medicine Creek Dam in Nebraska. He plans to do private consulting.



Architects and Engineers: Reid Rockwell Banwell and Tarics, San Francisco; *Prestressed Concrete Fabricator:* Basalt Rock Co., Napa, California.

PRESTRESSED CONCRETE CALIFORNIA SCHOOL QUALIFIES FOR STATE AID



...BROUGHT IN AT $30,000 UNDER ALLOWABLE BUDGET

This is the Mango Avenue Intermediate School, Sunnyvale, California. It has met the requirements for low-budget schools as determined by the Department of Finance, State of California. Heretofore, 90% of the schools that have met this requirement were constructed mainly of wood.

Simplification of the structural elements helped, in large measure, to bring this structure within the requirements for state aid. Basically, the structural elements consist of prestressed concrete beams, columns, wall panels and double-tee roof sections (see isometric detail above).

At the moment, the school is equipped to handle some 660 7th and 8th grade pupils. Provision has been made to expand the plant to accommodate the 9th grade, bringing the total population to approximately 1000 pupils.

Here, briefly, are some of the client's instructions that were met by choosing prestressed concrete: Comply with state aid limitations; allow for future expansion; provide for low maintenance.

The benefits brought to this structure by prestressed concrete can be applied to almost any kind of structure you can name. This includes garages, motels, office buildings, piers, bridges, plants and warehouses. For other purposes, "State Aid" can be translated into low-cost initial investment, a characteristic of prestressed concrete for *any* structure.

Roebling has played a significant role in the development and promotion of prestressed concrete; in the manufacture of the finest wire and prestressing strand available and in the compilation of data on design methods and tensioning techniques. We will be happy to share this experience and information with you. May we suggest that you contact the prestressed concrete fabricator in your area or write Roebling's Construction Materials Division, Trenton 2, New Jersey.

ROEBLING

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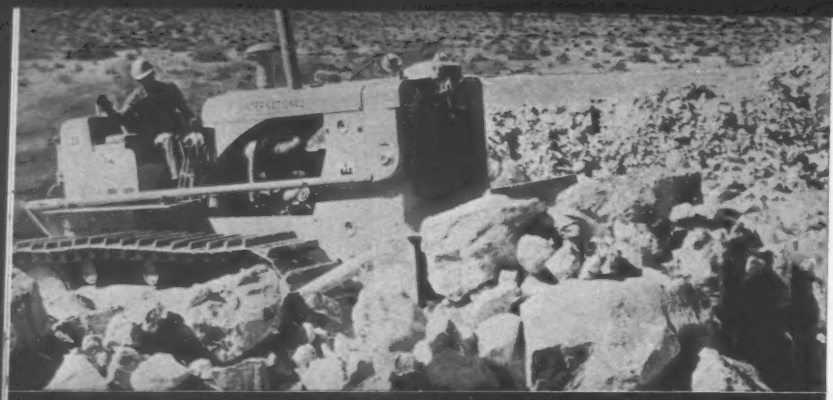
John A. Roebling's Sons Division
The Colorado Fuel and Iron Corporation



Even moving a blade-full of shot-rock around the curve, there's no hesitation, no sluing to spill the load. The TD-25's operator has separate speed control of each track to get full-capacity performance, full time. And only the new TD-25 has the power plus of the direct-start, turbocharged DT-817 International engine—that delivers 230 high-torque hpl

HOW POWER-STEERED, POWER-SHIFTED . . . TD-25 takes

—on California mining operation

Even before all the blast dust has settled, this International TD-25 is slamming tons of shot-rock from the benches, so trucks can resume hauling to the processing plant. Then, at this gypsum mine in California, the "25" takes over the "shovel-feeding" chore—dozing full blades of rock upgrade, downgrade, and 'round the curves, to help keep the big dippers swinging full. And in between times, the "25" takes over its third tough project: benching new haul road around mountain slopes!

Three slam-bang rock operations to handle—it's a made-to-order situation for the Planet Power-steered TD-25!

"Dead-track drag" eliminated! You don't brake a track and "half-kill" your pull-power to turn, as you do with king-sized clutch-steered crawlers. With Planet Power-steering you simply change the speed of one TD-25 track—on-the-go, and with 2-finger ease! Around comes the fully-loaded TD-25—with "live" power on both tracks and both tracks pulling. Load-limiting "dead-track drag" is eliminated!

And combined, on-the-go Hi-Lo power-shifting lets you match power to load, instantly—forward or reverse. Just shift one track to high range—the other to low—to do slope-hugging, full-bite benching, or to operate straight ahead with off-center loads!

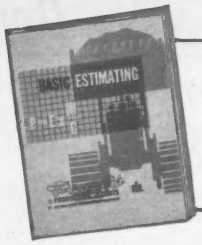
The "25" is platformed on new 7-roller tracks with double-box-beam frames. The design provides super undercarriage strength for slam-bang conditions—strength to match the full effort of the direct-start, high-torque DT-817 International Diesel engine.

Power-steer and power-shift the TD-25 with king-sized loads. Measure the bonus capacity you get with exclusive Planet Power-steering and Hi-Lo power-shifting. See how this control combination enables you to outearn other big rigs up to 50%. Then measure what it means to get this double-barreled advantage *only* in the TD-25—and as standard equipment *to boot!* Let your International Construction Equipment Distributor demonstrate.

International Harvester Co.
180 North Michigan Ave.
Chicago 1, Illinois
A COMPLETE POWER PACKAGE

International® Construction Equipment

"Boulder-dozing" after blasting— The TD-25 does some "blasting" itself to move "big-as-a-house" hunks of rock aside. Heavy-duty TD-25 Dura-Rollers defy the rock-dozing "grind"—with the industry's thickest shells to prevent flexing—positive grit exclusion—and 1,000-hr.-interval lube capacity!



Here's your 76-page cost and production estimating book—newest, most authentic and complete guide for estimating material-moving costs—and for selecting equipment combinations for top profits, *anywhere!* Yours for the asking from your International Construction Equipment Distributor!

over three slam-bang rock jobs

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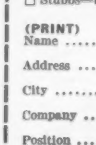

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Unit Prices

Sprinkler systems are priced for . . .

Air Force Base Landscaping

In a semi-arid area of New Mexico, where dust storms are prevalent and rainfall is scant, two Air Force bases are being landscaped for the Corps of Engineers, Albuquerque. Col. Albert L. Reed is the District Engineer.

The work was awarded in these two contracts, totaling $62,527:

Contract	Amount	Change from Engr. Est.
*Cannon AFB, Clovis, N. M.		
Base bid	$33,453	
Additive alternates	1,814	
Total	$35,267	−10.9%
**Walker AFB, Roswell, N. M.		
Base bid	$24,511	
Additive alternate	2,749	
Total	$27,260	+16%

* A. S. Brown Landscape Co., Sherman Oaks, Calif.
** Robert's Nurseries, Inc., Littleton, Colo.

The contracts include sprinkler systems; lawn seeding and maintenance; planting and maintenance of trees, shrubs and vines; mulching; 82 water service outlets at Cannon AFB and 42 at Walker AFB; and other related work.

Minimum wages range from a high of $3.00 for skilled, through $2.50 for semi-skilled, to $2.17 for common laborers. Tractor operators are paid $3.10 and truck drivers, $2.60.

The bidding included:

Cannon Air Force Base

1C	A. S. Brown Landscape Co., Sherman Oaks, Calif	$35,267
2	Robert's Nurseries, Littleton, Colo.	35,959
EE	Corps of Engineers, Albuquerque, N. M.	39,586

Bids: 2-16-60 Items	Unit	Quantity	Unit Prices 1C	2
Lawn sprinkler systems, 7,300 lf	ls	job	$10,000	$4,400
seeding	ac	9.6	950.00	492.75
maintenance	ls	job	1,500	1,999
Plant 1,240 trees, shrubs & vines & replacements.... maintain after specified original planting season:	ls	job	3,200	4,998
1960 plantings	mos	7	200.00	227.00
1961 plantings	mos	3	200.00	227.00
Water service outlets (82)	ls	job	5,355	13,500
Dust & erosion control mulching	ac	13.4	140.00	141.05
seeding, incl fertilizing	ac	13.4	30.00	50.05
Additive alternates: furnishing equipment	ls	job	1,185	1,000
	ls	job	629.00	500.00

Commence: March 1960. Completion schedule: 450 cal days

Walker Air Force Base

1C	Robert's Nurseries, Littleton, Colo.	$27,200
2	A. S. Brown Landscape Co., Sherman Oaks, Calif.	32,282*
EE	Corps of Engineers, Albuquerque, N. M.	23,585

* Base bid only. Did not bid on alternate additive.

Bids: 2-16-60 Items	Unit	Quantity	Unit Prices 1C	2
Lawn sprinkler system, 1,610 lf	ls	job	$3,100	$1,300
Plant 545 trees, shrubs & vines, & replacements... maintain after specified original 1960 planting season	ls	job	3,438	2,900
	mos	7	277.00	200.00
Grading dormitory area	ls	job	2,176	5,500
Topsoil, complete	cy	680	3.15	1.25
Lawn seeding	ac	11.3	497.05	950.00
Water service outlets (42)	ls	job	5,139	8,977
Sidewalk drains, complete	ls	job	950.00	600.00
Additive alternate: maintenance of lawns	ls	job	2,740	nb

Completion schedule: 405 cal days

Welded Steel Girder Bridge, New Hampshire

Relocation of routes U. S. 202 and New Hampshire 9 for the Hopkington-Everett Dam, will require construction of a three-span continuous welded steel girder bridge, approximately 317 ft long, over Elm Brook in Hopkington.

Span lengths are 96-120-96 ft. The reinforced concrete slab structure will have a roadway width of 32 ft, averaging a roadway cost of $25 per sq ft.

The Department of Public Works & Highways, Concord, awarded the contract at $253,515 to Theodore Loranger & Son, New Bedford, Mass., or a low bid less than 2% under the second and almost 11% under the high of seven bids. John O. Morton is commissioner and J. C. Downing construction engineer of the public works and highways department.

Compressive strengths of concrete are: Class A, 3,000 psi; Class AA, 3,500 psi, and Class C, 2,000 psi.

Minimum wages include: structural steel worker, $3.97; shovel operator, $3.50; pile driver operator, $3.50; bulldozer operator, $3.05; unskilled laborer, $2.15.

The seven bids on this bridge included:

1C	Theo Loranger & Sons, New Bedford, Mass.	$253,515
2	E. D. Swett, Inc., Pembroke, N. H.	257,085
7	Warner Bros., Inc., Sunderland, Mass.	284,657

Bids: 3-3-60 tems	Unit	Quantity	Unit Prices 1C	2
I				
Excavation, muck	cy	400	$0.90	$0.50
unci structural	cy	1,000	5.60	14.50
Earth borrow	cy	54,500	0.58	0.60
Gravel	cy	700	1.05	0.10
for special purposes	cy	1,000	1.35	2.00
Asph conc, hot, W.C., type I-1 (bridges)	t	121	17.00	15.00
Concrete, class A	cy	702	46.00	50.00
class C	cy	262	22.00	35.00
class AA	cy	341	56.00	60.00
Water repellent	gal	45	7.00	7.00
Steel, reinforcing	lb	131,174	0.14	0.135
structural	ls	job	83,932	75,700
Bridge shoes	ls	job	5,400	4,000
Piles, steel bearing	lb	54,750	0.12	0.10
Pile loading tests	ea	1	600.00	400.00
driving equipment	ls	job	2,000	1,500
splices	ea	3	40.00	50.00
Bridge railing, E	lf	628	12.00	12.00
Riprap, B	cy	1,476	15.70	15.00
Str granite curb (bridge)	lf	626.1	5.20	4.25
Waterprfg (tar-epoxy mix)	ls	job	2,700	2,500
Tile gage	ls	job	700.00	1,000

Complete: 9-1-61

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

HOURLY WAGE RATES—Base rate + fringe benefits

	Common Labor: Building	Common Labor: Heavy Const	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$1.90	$1.90	$3.90	$3.25	$3.45+7½¢	$3.60	$3.39	$3.50+10¢	$3.80+20¢	$1.90	$2.00	$2.25*B*
Baltimore	2.27+7½¢	2.27+7½¢	4.10+10¢	3.50+7½¢*f*	3.90+7½¢	3.35/4.05+10¢*A*	3.80+10½¢	3.75+7½¢	3.74+9½¢	2.15+7½¢	2.15+7½¢	2.25+7½¢
Birmingham	1.85	1.95	3.95	3.15	3.50+10¢*mn*	3.18	3.27	3.65	3.58+12½¢*p*	1.90	2.10	2.35
Boston	2.65+10¢	2.55+10¢	3.80+20¢	3.65+10¢	4.02+20¢	4.05+20¢	3.65+45¢	3.90+25¢	3.95+27¢*R*	2.70+23¢	2.70+23¢	2.70+23¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.07½+7½¢	3.75+20¢*o*	4.15+16¢*n*	3.75+5¢	3.95+23¢	4.10	3.95+24¢	2.55+175¢*R*	.....	.....
Cincinnati	2.75	2.65	3.90+10¢	3.75*D*	3.80+10¢	3.475/3.70*A*	3.725+.04	3.97+39½	3.95+9½¢	2.55+62½¢	2.60+6½¢	2.65+6½¢
Cleveland	3.37*b*	3.285*b*	4.085+10¢*b*	4.11*b*	4.01+10¢*b*	4.11*b*	4.11*a*	4.17*b*	3.91+20¢*b*	2.92+15¢*a*	2.92+15¢*a*	2.92+15¢*a*
Dallas	1.80	1.90	4.00	3.35*b*	3.55+7½¢	3.50*B*	3.75+13¢	3.50+7½¢	3.575+8½¢	1.80/2.625	1.80/2.625	1.80/2.625
Denver	2.32	2.32	4.00	3.50	3.41+7½¢	3.25	3.75+12¢	4.05+14¢	3.95+10¢	2.40*B*	2.75*B*	2.90*B*
Detroit	2.80+42¢	2.80+42¢	3.98+34¢	3.63+46¢	3.90+22½¢	3.55+36¢	3.60+34¢	4.00+48	3.835+17½¢	2.95	2.95	2.95
Kansas City	2.455	2.505	4.075	3.625	3.55	3.445	3.75	3.75+35*b*¢	3.80+9½¢	2.555	2.555	2.63
Los Angeles	2.85+10¢	2.68+10¢	4.20+28¢	3.325+20¢	4.07½+23½¢	3.61+15¢	4.25+42½¢	4.40+44	4.10+52¢	3.365+10¢	3.365+10¢	3.555+10¢
Minneapolis	2.85	2.85	4.025	3.45	3.62	3.60	3.60+33¢	3.70+40¢	3.77+20¢	2.85	2.85¢	3.00
New Orleans	1.67½¢	1.87½¢	3.67½+7½¢*d*	3.25*d*	3.55+7½¢*d*	3.325+7½¢*d*	3.19+5¢*jk*	3.77+7½¢	3.70+7½¢*dl*	3.325+7½¢*d*	3.375+7½¢*d*	3.325+7½¢*d*
New York	3.30+26¢*c*	3.30+26¢*c*	4.80+44¢	4.40+35¢*k*	4.60+47¢*j*	4.65+37¢	4.50+65¢	4.45+1.424	4.50+54¢	2.35+22½¢	3.40+28½¢	3.40+28½¢
Philadelphia	2.60	2.65+10¢	4.25+17¢	3.885	4.30+23¢	3.935/4.215+10¢*A*	4.15+15¢	4.37½+16¢	4.10+31½¢	2.45+15	2.45+15½¢	2.45+15
Pittsburgh	2.575+20¢	2.55+20¢	4.30+20¢	3.775+20¢	4.15+20¢	3.73+20¢	3.95+20¢	4.60+34½¢	4.00+20¢	2.50+20¢	2.635+20¢	2.735+20¢
St. Louis	2.875+10¢	2.875+10¢	4.05+32½¢	3.825+10¢*c*	3.85+7½¢	3.95	3.90+07½¢	4.11+31¢	4.07½+22½¢	2.90+15¢	3.10+15¢	3.20+15¢
San Francisco	.045+10¢	3.045+10¢	4.25+42½¢	3.55+30½¢	4.075+22½¢	3.60/3.76+28¢	3.79+63¢	4.22+29¢	4.14+59¢	3.00+11¢	2.75+20	2.89+20¢
Seattle	3.15+10¢	3.15+10¢	4.15+10¢	3.38+20¢	3.76+10¢	3.59+20¢	3.72+30¢	3.80+26¢	3.81+24¢	3.15+20¢	3.15+20¢	3.35+20¢
Montreal	1.75+4¢*q*	1.75+4¢*q*	2.55+5¢*q*	2.35+5¢*q*	2.55+6¢	2.35+5¢	2.65+6¢	2.45+5¢	2.62+6¢*a*	1.75+4¢	1.75+4¢	1.75+4¢
Toronto	2.00+8¢	2.00+8¢	3.15+13¢	2.90+12¢	3.05+12¢	3.15+13¢	3.20+21¢	3.52+14¢	3.20+13¢	1.90+14½¢	1.90+14½¢	1.90+14½¢

	Tractor Operators incl. bulldozer: 34–49 hp	70–100 hp	100 & over	Tractor scraper 18–16 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$3.00	$3.075	$3.075	$2.925	$3.45	$3.60	$2.925	$2.85	$2.00
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.65+10¢	3.25+10¢	2.25+7½¢
Birmingham	3.18	3.18	3.18	3.18	3.18	3.18	3.18	2.77	2.05
Boston	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.90+20¢	3.90+20¢	3.52½+20¢	3.45+20¢	2.80+10¢
Chicago	3.50+5¢	3.65+5¢	3.70+5¢	3.70+5¢	4.10+5¢	4.10+5¢	3.70+5¢	3.55+5¢	3.70+5¢
Cincinnati	3.475+10¢	3.475+10¢	3.475+10¢	3.475+10¢	3.475+10¢	3.70+10¢	3.70+10¢	3.70+10¢	3.70+10¢
Cleveland	3.86*b*	3.86*b*	3.86*b*	3.86*b*	4.11*b*	4.11*b*	3.86*b*	3.735*b*	3.735*b*
Dallas	1.80/2.625	1.80/2.625	1.80/2.625	1.80/2.625	3.225*h*	3.225*h*	1.80/2.625	1.95	1.95
Denver	2.50	3.10	3.10	3.10	3.25	3.25	3.10	3.10	2.00
Detroit	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.275+15¢	2.03+34¢
Kansas City	2.75	3.20	3.20	3.20	3.445	3.445	3.20	3.20	2.55
Los Angeles	3.91+15¢	3.91+15¢	3.91+15¢	4.01+15¢	4.01+15¢	4.01+15¢	4.01+15¢	3.13+15¢	3.09+10¢
Minneapolis	3.23	3.45	.....	3.45	3.67	4.03	3.23	3.12	3.00
New Orleans	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	2.70+7½¢*d*	1.95*e*
New York	4.025+32¢	4.025+32¢	4.025+32¢	4.15+33¢	4.90+39¢	4.90+39¢*k*	4.15+33¢	4.15+33¢	4.15+21¢
Philadelphia	3.52+10	3.665+10	3.665+10	3.79+10	4.215+10	4.215+10	3.765+10	3.41+10	2.35
Pittsburgh	3.72+20¢	3.72+20¢	3.72+20¢	3.72+20¢	3.92+20¢	3.92+20¢	3.92+20¢	3.43+20¢	2.60+20¢
St. Louis	3.95	3.95	3.95	3.95	3.95	3.95	3.95	3.40	3.40
San Francisco	3.79+28¢	3.79+28¢	3.79+28¢	3.92+80¢	4.08+28¢	4.08+28¢	3.98+28¢	3.29/3.66+28¢	3.475+10¢
Seattle	3.56+20¢	3.56+20¢	3.56+20¢	3.56+20¢	3.93+20¢	3.93+20¢	3.65+20¢	3.29+20¢	3.29+10¢
Montreal	1.95+4¢	2.18+5¢	2.18+5¢	2.18+5¢	2.45+5¢	2.45+5¢	2.18+5¢	2.05+4¢	2.05+4¢
Toronto	2.40+10¢	2.50+10¢	2.50+10¢	2.50+10¢	3.00+13¢	3.15+13¢	2.80+11¢	2.50+10¢	2.50+10¢

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.95, ENR Common Average $2.642

Description of fringe benefits last appeared Sept. 17 1959. *A 1–2 drum.

DEFERRED WAGE INCREASES UNDER PRESENT CONTRACTS: 1960: a May 1; 10¢ b May 1; 12¢ k May 1; 8¢ l May 1; 10¢ m Jan. 1; 15¢ n Jul. 1; 5¢ o Jun. 30; 22½¢ s Apr. 1; 15¢ 1959: c Dec. 1; 10¢ d Nov. 1; 10¢ e Nov. 1; 5¢.

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	GYPSUM PLASTER BOARD tapered edge per Msq ft ⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag a	MINERAL WOOL INSULATION 3" batts per M sf a	GLASS FIBER INSULATION loose, per 40-lb bag a	GLASS FIBER INSULATION 3" batts per M sf a	ALUMINUM FOIL 60¢ Kraft 1 side foil per roll of 250 s. f.	ALUMINUM FOIL Expansible Blanket 2 layers foil per Msq ft
Atlanta	$65.00*F*	$55.00*F*	$42.50*F*	$68.00*F*	$72.00*F*	$127.00*F*	$75.00*F*	1.59*z*	$70.00*F*	$2.00	$80.00*F*	$4.77*qi*	.....
Baltimore	54.00	47.50	35.75	55.70	65.00	108.50	69.00	1.40*F*	67.50*F*	1.60*F*	47.00*F*	4.00*F*	$33.50*F*
Birmingham	68.90*H*	57.00*H*	47.77*H*	75.00*H*	67.50*H*	140.50*H*	83.50*H*	1.40	70.00	2.00	65.00	3.77*gO*	.....
Boston	60.00*mH*	50.00*mH*	35.00*mH*	55.00*mH*	65.00*H*	120.00*H*	79.00*knH*	1.40*bH*	78.00*H*	.....	75.00*H*	5.30*zHS*	53.50*qH*
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.85	80.00	.....	63/65*l*	5.25*j*	.....
Cincinnati	52.50*wH*	42.85*wH*	33.05*wH*	51.16*wH*	77.00*wH*	125.00*wH*	72.50*wH*	1.45*wH*	62.50*wH*	1.45*wH*	62.50*wH*	3.28*wJ*	50.00*wJ*
Cleveland	62.00*CF*	56.50*CF*	41.50*CF*	65.00*CF*	80.00*CF*	129.00*CF*	80.00*CF*	1.40/1.55*H*	75.00*H*	.....	67.00	14.00*woJ*	55.00*J*
Dallas	56.25	46.85	42.50	56.25	68.75	118.00	68.75	2.00	65.69	1.45	70.67	5.00*gAG*	45.00
Denver	66.50*H*	58.50*H*	45.00*H*	68.75*H*	84.00*H*	130.00*H*	84.00	1.50*b*	65.00*ub*	1.75*b*	65.00*a*	5.25	48.65
Detroit	66.00*K*	56.00*K*	42.45*K*	66.00*K*	62.50*DK*	103.50*DK*	62.50*DK*	1.30*b*	50.00	1.95*b*	80.00	.....	....
Kansas City	72.00*H*	62.00*H*	45.00*H*	.....	75.00*H*	122.00*H*	80.00*H*	1.40*H*	75.00*H*	1.80*H*	75.00*H*	3.60*d*	53.98
Los Angeles	66.00*F*	60.50*F*	0.33*xF*	64.50*F*	75.00*F*	125.00*F*	80.00*F*	76.00*BeF*	83.00*F*	1.35*s*	64.00	4.40*g*	7.45*V*
Minneapolis	75.00*F*	65.00*F*	0.44*xL*	75.00*F*	95.00*F*	130.00*F*	78.00*F*	2.25*yF*	80.00*F*	2.10*F*	80.00*F*	4.95*F*	.....
Montreal	58.00*M*	49.30*M*	37/41.50*M*	53.00*M*	64.75*M*	.....	58.50*M*	1.50*M*	66.00*M*	1.50*M*	66.00*M*	9.00*gM*	56.00*M*
New Orleans	57.00*H*	52.00*H*	45.00*H*	60.00*H*	67.00*H*	140.00*H*	80.00*H*	2.00*L*	70.00*	.....	.....	.....	52.12*U*
New York	65.00*H*	55.00*H*	42.50*H*	60.00*H*	78.00	124.00	78.00	1.55*b*	68.50*k*	.....	.....	4.38*tH*	40.00*cH*
Philadelphia	*H* 53.00	46.00	37.50	53.50	70.00	120.00	70.00	1.35	50.00	1.40	50.00	3.85	83.50
Pittsburgh	74.00*K*	65.00*K*	40.00*K*	63.00*K*	63.00*K*	103.35*K*	58.10*K*	1.10*sK*	55.00*K*	1.10*sK*	55.00*K*	4.20*sqK*	38.50*K*
St. Louis	65.00*HO*	55.00*HO*	40.00*HO*	70.00*HO*	74.00*HO*	120.00*HO*	80.00*HO*	1.35*yHO*	75-81*HO*	2.09*PHO*	77.00*HO*	4.50*qHO*	.....
San Francisco	60.00*F*	49.00*F*	0.36*xF*	61.00*F*	70.00*F*	111.00*F*	69.00*F*	1.75*F*	66.50*F*	1.75*F*	66.50*F*	5.10	60.00*F*
Seattle	68.00*K*	58.50*K*	51.50*K*	65.50*K*	65.00*K*	125.00*K*	71.00*K*	1.15*tK*	58.00*K*	1.90*pK*	51.00*tKA*	4.25*K*	46.50*EK*
Toronto	58.00	50.00	45.00*L*	67.50	79.00*T*	.....	88.00*T*	1.85	72.00	.....	72.00	14.75*o*	46.00

**F.o.b. warehouse. *a Semi thick. *b 30# bag. *c 3 layers of foil: $54.50. *d 40# kraft paper, 5 Msf, 100/500 rolls. *e 20# sq ft bag, 4" thick. *f Full trailer loads. *g 80# kraft paper backing 400 rolls or over. *h LCL. *i 40#. *j 80#. *k 2-in. *l 2". *m 8 to 10 ton quantities. *n Distributor's siding. *o Per Msf roll. *p 32# bag. *q 500 sf. *s 35# bag. *t 25# bag *u Flame proof $75. *v 5000 sf quantity. *w F.o.b. city. *x Sq. yd. *y 30# bag. *z Spun rock wool. *A 650 sf. *B ton. *C F.o.b. plant, freight allowed. *D CL. *E 10 Msf. *F less 2% disc, 10th. *G ½ of 1%, 10 days. *H 2% disc, 10 days. *J 1% disc, 10 days. *K less 2% for cash. *L 5% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales tax. *P 50 lb. bags, *Q add 4% sales tax. *R revised. *S 45 lb. *T less 2%, 30 days. *U lots of 2606 sq. ft. *V 250 sf roll.

MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos)a		Apr. '60
Common labor,	building (peons)	101.50
	heavy const (peons)	136.50
Skilled labor,	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct. ironworkers	315.00

*a 6 days work-extra day's pay

MATERIALS PRICES, F.o.b. City (pesos)		Apr. '60
Struct. steel shapes, fob Monterey		
I-beams, 3 x 3 x 4"	per metric ton	2900.00
Reinf. steel, corrugated rods, per ton		
⅜"–½" x 11 meters consolidads.		2000.00
¾"–1" x 11 meters		1900.00

		Apr. '60
Gravel, truckload, per cu meter		
Blue gravel		33.00
Cement, std. port. (Tolteca)	per metric ton	280.00
Lumber, 2" x 4" 1st class pine 20 ft.	per M sq. ft.	3500.00
2" x 4" 2nd class pine	per M sq. ft.	2600.00

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

Mass., Lowell—BA 6/6—City, P. Wks. Dpt., City Hall, French St. bridge expansion. $180,000. Plans deposit $10. Green Engineering Affiliates, Inc., 177 Milk St., Boston, Mass., engr. CD 5/21/59.

Mass., Gardner—WATER SUPPLY DISTRIBUTION—BA 6/7—Commonwealth of Mass., Dept. Mental Health, Div. Bldg. Constr., 38 Chauncy St., Boston, M58-2 Contr. 2, water supply distribution, State Hospital. $244,000. Plans deposit $30. Whitman & Howard, Inc., 89 Broad St., Boston, Mass., engr.

Conn., Norwich—ELECTRICAL DISTRIBUTION—BA 6/8—State P. Wks. Comrs., 165 Capitol Ave., Hartford, Proj. BI K 135, electrical distr. facilities addn., Norwich State Hospital. CD 6/25.

Conn., Windsor Locks—RUNWAYS AND TAXIWAY—BA 6/8—State P. Wks. Comrs., 165 Capitol Ave., Hartford, Proj. BI CC 88, strengthening, extending runways and taxiway modification, Bradley Field. $750,000. Plans deposit $25. CD 2/5/59.

† **Mass., Chelsea**—PRIMARY ELECTRIC LOOP SYS.—BA 6/8—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston 10, Mass., extension of primary electric loop sys., U. S. Naval Hospital, NBy-31391, Spec. No. 31391/60. Under $10,000.

Conn., Stratford—BA 6/9—Town, Town Hall, Contract 60-3, storm drainage, Winton Pl., Mt. Pleasant Ave., Porter St., Lindsley Pl. area, Chapel St., Stiles St. area. Plans deposit $10. CD 10/4/51.

Conn., East Hartford—BA 6/14—Town, Dir. P. Wks., 740 Main St., Walnut St. bridge over Hockanum River. Plans deposit $20. Walter J. Douglas Assocs., 17 S. Highland St., West Hartford, engrs.

† **Mass., Chicopee Falls**—WHERRY HOUSING—BA 6/17—Base Procurement Office, Officer in Charge of Constr., Bldg. T273, Westover Air Force Base, Wherry housing rehabilitation, Westover Air Force Base, IFB 19-617-60-63. $200,000. Munson, Mailis, Bradley, Patterson & Burgener, 6 Frost St., Springfield, Mass., archts.-engrs. CD 12/17/58.

† **Mass., Bedford**—LIBRARY, etc.—BA On Or About 6/21—U. S. Eng., 187 Westminster St., Providence, R. I., constr. library, research and professional, L. G. Hanscom Field, ENG-19-016-60-77. $400,000-$500,000. Plans deposit $10. CD 9/17/57.

BUILDINGS—BA

Conn., New London—ARMORY—BA 6/8—State P. Wks. Comr., 165 Capitol Ave., Hartford, Proj. BI Q 195, 3 unit armory, Military Dpt. $600,000. Plans deposit $15. J. Gerald Phelan, 211 State St., Bridgeport, archt. CD 6/19/58.

Mass., Brighton—HOSPITAL ADDN.—BA 6/8—Joseph P. Kennedy Jr. Hospital, 50 Warren St., surgical unit, hospital addn., Warren St. $400,000. Maginnis & Walsh & Kennedy, 126 Newbury St., Boston, Mass., archts. CD 5/27/59.

▲ **Vt., Brandon** — HIGH SCHOOL — BA 6/9 — Brandon-Pittsford Union School Dist., Ottery Valley Union High School. $1,000,000. Extended date. Julian Goodrich, 930 Shelburne Rd., South Burlington, Vt., archt. CD 4/26.

Conn., Waterbury — SCHOOL — BA 6/10 — Bd. Educ., Crosby High School, Sprague School addn. $400,000. Plans deposit $35. CD 3/19/59.

Mass., Quincy—NEWSPAPER PLANT—BA 6/10—Quincy Patriot Ledger, 13 Temple St., (selected list bidders), newspaper plant, Folsum St. $420,000. Charles T. Main, Inc., 230 Congress St., Boston, Mass., engr.

▲ **Vt., Waterbury**—HOSPITAL ADDN.—BA 6/14—State Bldg. Comm., State Office Bldg., Montpelier, hospital addn., State Hospital. $1,000,000. Extended date. Webber & Erickson, 56½ Merchant's Row, Rutland, archts. CD 5/11.

† **Mass., Winthrop**—MISSILE MASTER FACILITIES, etc.—BA On Or About 6/14—U. S. Eng., 187 Westminster St., Providence, R. I., constr. missile master facilities, 2nd Increment, consisting masonry block sentry bldg., modifications to six barracks and BOQ bldg. Fort Heath and Fort Banks, ENG-19-016-60-72. $200,000-$300,000. Plans deposit $5.50.

▲† **Me., Topsham**—HOUSING—BA 6/15—Base Procurement Office, Topsham Air Force Station, Brunswick, Me., 177 units Capehart Housing, Topsham Air Force Station, IFB 17-612-60-2. $2,900,000. Extended date. Kelly & Gruzen, 10 Columbus Circle, New York, N. Y., archts.-engrs. CD 4/25.

Me., Orono—COLLEGE OF EDUCATION—BA 6/17—State, Dpt. Education, State House, Augusta, college of education. $750,000. Plans deposit $50. Crowell, Lancaster, Higgins & Webster, 6 State St., Bangor, Me., archts. CD 12/11/59.

Mass., Cheshire — SCHOOL — BA 6/21 — Town, Supt. Schools, elementary school addn. $400,000. Plans deposit $50. Bernhard Dirks, 478 Mohawk Trail, Greenfield, Mass., archt. CD 11/5/59.

† **Mass., Bedford**—THERAPEUTIC BLDG.—BA 8/23—U.S.A. dir. Design Service, Veterans Administration, Munitions Bldg., Wash., D. C., therapeutic bldg., Veterans' Hospital. $500,000. James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., archts. CD 12/17/59.

Mass., North Andover—HOUSING FOR THE ELDERLY—BA 6/21—Town Housing Auth., housing for the elderly. $400,000. Plans deposit $50. Thomas J. Pearson Assoc., 351 Essex St., Lawrence, Mass., archts. CD 8/11/59.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., Augusta,
Hornbrook, Inc., Madawaska, Me., CA $338,187 (8 bidders) b. conc. road 3.391 mi. Towns of Caribou and Connor. FAP No. F-050-2(6), Aroostock Co. Bids May 18. CD 5/2.

▲ **NEW HAMPSHIRE**—Dpt. P. Wks. & Hys., Concord, Bids opened 5/12,
M. DeMatteo Constr. Co., 200 Hancock St., Quincy, Mass., LB **$1,055,420,** (9 bidders), hot b. conc. roadway 0.568 mi., four 3-span steel beam bridges 146, 151, 153 and 159 ft. in lengths, Rockingham Co. CD 4/27.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, bids opened 5/17,
Cedar Hill Landscape Service, 1182 Main St., South Weymouth, Mass., LB **$95,687** est. $128,048, roadside development. F-191(7), Falmouth. CD 5/5.
Turner & Breivogel, Inc., Grand Ave., Falmouth Heights, Mass., LB **$250,150** est. $248,100, dredging basin areas, Allerton Harbor, Hull, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids May 17. CD 5/6.
MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,
Coleman Bros. Corp., 85 Sprague St., Readville, Mass., CA **$945,469,** est. $1,061,511, wid'n. Section Rte. 128 incl. three bridges FAP-U-272(41), Lynnfield and Wakefield. Bids Mar. 15. CD 3/18, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

BUILDINGS—LB & CA

▲ **Davison Constr. Co., Inc.,** 1306A Elm St., Manchester, N. H., CA est. **$1,000,000,** MOTHER HOUSE, Jct. Rtes. 28 and 111, WINDHAM, N. H., Sisters of Mercy, 435 Union St., Manchester, N. H., Bids May 13. CD 4/29.

▲ **H. P. Cummings Constr. Co.,** High St., Woodsville, N. H., LB **$1,988,888,** LIBRARY, BURLINGTON, VT., University of Vermont, 85 S. Prospect St., Burlington, Vt., CD 7/15.

Ernest F. Carlson, 1694 Main St., Springfield, Mass., CA Approx. **$225,000,** MANUFACTURING PLANT, Agawam Industrial Park, AGAWAM, MASS. Pioneer Valley Plastics, Inc., 9 Spring St., Chicopee, Mass. E. Edwin Carlson, 1694 Main St., Springfield, Mass., engr.

▲ **Poley-Abrams Corp.,** 45 Bartlett Crescent, Brookline, Mass., CA **$1,500,000,** SPORTS CENTER and RESTAURANT, off Brimball Ave., BEVERLY, MASS. Go-Go Corp., 65 Main St., Peabody, Mass. Salsberg & LeBlanc, 318 Harvard St., Brookline, Mass., archts. CD 4/20.

James S. Kelliher, Inc., 1245 Hancock St., Quincy, Mass., CA **$922,353,** est. $1,000,000, ELEMENTARY SCHOOL, Worcester St., Roxbury Section, BOSTON, MASS. Dpt. School Bldgs., 26 Norman St., Boston, Mass. Bids Apr. 21, awarded May 19. CD 4/27, under LB.

Anderson Construction Co., Inc., 68 Park Ave., Braintree, Mass., Owner Builds, **$424,000,** RESIDENTIAL DEVELOPMENT, Hills View, BRAINTREE HIGHLANDS, MASS.

John F. Griffin Co., 34 Regent St., Cambridge, Mass., CA Approx. **$800,000,** PARKING STRUCTURE, Main and Vassar Sts., CAMBRIDGE, MASS. Massachusetts Institute of Technology, 77 Massachusetts Ave., Cambridge, Mass. Hamilton & Goody, 238 Main St., Cambridge, Mass., archts. Bids Apr. 26. CD 4/11.

Vappi & Co., Inc., 240 Sidney St., Cambridge, Mass., CA Approx. **$850,000,** CLASSROOM BLDG. addn., Gerry's Landing Rd., CAMBRIDGE, MASS. Brown & Nichols School, Gerry's Landing Rd., Cambridge, Mass. Bids May 4. CD 4/20.

▲ **Grande & Son, Inc.,** 175 Maplewood St., Malden, Mass., CA **$1,899,579,** est. $2,000,000, HIGH SCHOOL, Burley Farm Area, Cabot Rd., DANVERS, MASS. Town, Pickering St., Danvers, Mass. Bids May 11, awarded Maw 19. CD 5/13, under LB.

▲ **Middlesex Homes, Inc.,** 1 Russell St., Woburn, Mass., Owner Builds, **$1,800,000** (Section 3), RESIDENTIAL DEVELOPMENT, Woodvale, Rte. 62, DANVERS, MASS.

▲ **Agostini Constr. Co., Inc.,** 70 Beacon St., Pawtucket, R. I., CA Approx. **$1,500,000,** SHOPPING CENTER, State Hy. West of Smith Mills, DARTMOUTH, MASS. Owner, c/o James E. Brewer, 10 Hathaway Rd., North Dartmouth, Mass. CD 5/23.

▲ **K-V Homes, Inc.,** 1160 Bay St., Springfield, Mass., Owner Builds, **$1,074,850,** 83 HOUSES, Sherwood Manor, Brainard Rd., ENFIELD, CONN. CD 6/19/58.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Md., Baltimore—PORT DEVELOPMENT—BA 6/7—Maryland Port Authority, Pier 2, Pratt St., Contr. MPA-E60-2 A-B-C & D, (A) abutment, fender racks, dolphins and lay slip; (B) pontoons; (C) bridge and elec. work (D) general proposal, pontoon bridge No. 4, Port Covington. Plans deposit $20.

Pa., Phila.—BA 6/7—Procurement Dpt., Room 313, City Hall Annex, Bids Nos. 2559-2564, sewers and appurtenant work at various locations. CD 11/8/58.

† **Pennsylvania**—BOILER ROOM—BA 6/9—U. S. Eng., 925 New Federal Bldg., Pittsburgh, Zone 19, boiler room, mess hall addn., Control Area, Special AAA Site PI-71C, Pittsburgh Defense Area, Allegheny Co., ENG-36-058-60-29. CD 8/18/55.

Pa., Phila.—BA 6/9—Procurement Dpt., Room 313, City Hall Annex, asphalt repaving Walnut St. from 46 ft. West of West House Line of Broad St. to West Curb Line of 22 St., incl. relaying water mains and reconstr. sewer; grading, asphalt paving, culvert, sewer and water main Welsh Rd. from Verree Rd. to Pine Rd., and grading Welsh Rd. from Pine Rd. to County Line. CD 11/28/58.

† **Md., Annapolis**—ELECTRICAL DISTRIBUTION ADDN.—BA 6/15—Area P. Wks. Office, Chesapeake, U. S. Naval Weapons Plant, Wash., D. C., electrical distribution and lighting sys. addns., flood lighting, land reclamation, U. S. Naval Academy. NBy-27696. $500,000-$1,000,000. CD 9/8/58 under Public Buildings.

† **Maryland**—BA 6/16—U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C., dredging and jetty, access channel to Herring Creek, Potomac River, St. Mary's Co. CIVENG 49-080-60-27(66). CD 5/11.

Md., Oakland—BA 6/16—Mayor and Town Council, Third St., Water Sys. Imprvts. Contr. 1, raw water

intake and pumping station; Contr. 2, water mains; Contr. 3, water treatment plant; Contr. 4, electrical work. Plans deposit $60. The Chester Engineers, 601 Suismon St., Pittsburgh 12, Pa., engrs.

† **N. J., Highlands**—FPS-26 FREQUENCY DIVERSITY RADAR FACILITIES—BA 6/16—U. S. Eng., 111 E. 16th St., New York, Zone 3, constr. FPS-26 frequency diversity radar facilities, Highlands Air Force Station, ENG-30-075-60-128. $300,000. Plans deposit $10.

† **N. Y., Lockport**—RADAR FACILITIES—BA 6/16—U. S. Eng., 111 E. 16th St., New York, Zone 3, constr. FPS-26 frequency diversity radar facilities, Lockport Air Force Station, ENG-30-075-60-126. $300,000. Plans deposit $10. CD 7/11/58, under Unclassified.

† **New York**—BA 6/20—Soil Conservation Service, 236 W. Genesee St., Syracuse, Zone 2, one rockfilled concrete crib, streambank protection, removal of old structure, East Branch Cazenovia Creek Subwatershed site, near Center St. Bridge, East Aurora, Erie Co., Bid SCS-11-NY-60.

† **N. Y., Lockport**—GROUP HEADQUARTERS BLDG.—BA 6/21—U. S. Eng., 111 East 16th St., New York, Zone 3, constr. group headquarters bldg., Lockport Air Force Station, ENG-30-075-60-1. $150,000. Plans deposit $10. CD 7/11/58, under Unclassified.

▲ **N. Y., New York**—BA 6/21—Bd. Water Supply, 13th Floor, 120 Wall St., New York City, Contr. 465, Cannonsville dam, waste weir and weir, waste, and outlet channels and completion of release water works together with the plugging of the diversion conduit, constr. of gaging weir, access road and final grading in vicinity of the dam, etc., near Village of Deposit, Delaware Co. Plans deposit $4. CD 1/27/50.

BUILDINGS—BA

† **D. C., Wash.**—DORMITORY, etc.—BA 6/7—General Services Admin., 7th and D Sts. SW, alterations to men's dormitory and service bldg., Gallaudet College. Bids Mar. 31 rejected. CD 3/14.

† **Md., Aberdeen Proving Ground**—VAULT ADDN.—BA 6/8—Procurement Branch, Aberdeen Proving Ground, vault addn. to Wing 3, Bldg. 310, Aberdeen Proving Ground. IFB 60-163B. CD 9/5/58.

▲ **Md., Bethesda**—CHURCH—BA 6/8—Archdiocese of Washington, 1721 Rhode Island Ave. N. W., Wash., D. C. (selected list bidders) Our Lady of Mercy Catholic church and school, Bradley Blvd. near Aldershot Dr. $1,000,000. Anthony Campitelli, 7961 Eastern Ave., Silver Spring, Md., archt. CD 1/6.

▲ **N. Y., Oceanside**—SCHOOL—BA 6/8—Bd. Educ. Unif. School Dist. No. 11, Town of Hempstead, 1, 2 and 3 story, 140,000 sq. ft. brick, concrete block, steel Walter S. Boardman School. Extended Date. $2,800,000. Plans deposit $75. general $50 mechanical trades. Knappe & Johnson, 2110 Northern Blvd., Manhasset, N. Y., archts. Joseph R. Loring, 101 W. 47th St., New York, N. Y., mechanical engrs. CD 5/5.

▲† **D. C., Wash.**—CARTOGRAPHIC ENGINEERING—BA 6/14—U. S. Eng., 1st and Douglas Sts., NW, Cartographic Engineering Bldg. and wall repairs, Erskine Bldg. at Army Map Service, Eng. 49-080-60-34(73). Plans deposit $6.20. Lawrie & Green, 321 N. Front St., Harrisburg, Pa., archts. CD 5/9.

N. J., Oakland—SCHOOL—BA 6/14—Bd. Educ. Borough of Oakland Heights School, Manito Ave. School, $650,000. Osborne & Osborne, 15 Orient Way, Rutherford, archts. CD 10/8.

▲ **N. Y., Brooklyn**—SCHOOL—BA 6/16—Supt. of Design, Constr. & Physical Plant, Bureau of Constr., 4th Fl., 42-15 Crescent St., Long Island City Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Proj. E-818 P. S. 288, Surf Ave. and W. 25th and W. 27th Sts. Brooklyn Boro. $2,400,000. Plans deposit $25 general, $10. mechanical trades. CD 1/25.

▲ **N. Y., Rockaway Beach**—SCHOOL—BA 6/16—Supt. of Design, Constr. & Physical Plant, Bureau of Constr., 4th Fl., 42-15 Crescent St., Long Island City Zone 1, general contract, plumbing and drainage, heating and ventilating electrical work and lighting fixtures Proj. E-462, P. S. 183, Beach Channel Dr. and Beach 80th and 81st Sts., Queens Boro. $2,545,000. Plans deposit $25. general $10. mechanical trades. CD 1/25.

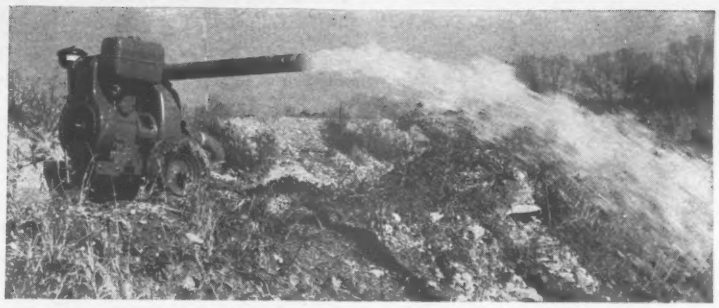
▲ **N. Y., South Ozone Park**—SCHOOL—BA 6/16—Supt. of Design, Constr. & Physical Plant, Bureau of Constr., 4th Fl., 42-15 Crescent St., Long Island City Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Proj. E-463 P. S. 232, 83rd and 84th Sts., 153rd and 155th Aves., Queens Boro. $2,400,000. Plans deposit $25 general $10. mechanical trades. CD 1/25.

HEAVY CONSTRUCTION—LB & CA

▲ **The Forest Co.**, R.D. 1, Mechanicsburg, Pa., LB $2,624,350, Seaside Blvd. Imprvt. Contr. No. 2, regulating, grading, paving, curbs, sidewalks and utilities, Winfield St. to Fort Wadsworth, Richmond Boro, NEW YORK, President Richmond Boro, Boro Hall, St. George, Staten Island 1, N. Y. Bids May 17. CD 5/2.

Edenwald Contg. Co., Inc., 151-45 6th Rd., Whitestone, N. Y., LB $131,062, park and parking lot, Lafayette St., Leonard St. and Centre St., NEW YORK, N. Y. Comrs. Parks, Arsenal Bldg., Central Park, 64th St. and 5th Ave., New York 21, N. Y. Bids May 17. CD 5/10.

†▲ **John Tester & Son**, Clinton, Md., LB $1,641,438 (8 bidders) airmens dormitories, John H. Towers Field, ENG-49-080-60-5 (5), ANDREWS AIR FORCE BASE, MD. U.S. Eng., First & Douglas Sts. N.W., Wash. 25, D. C. Bids May 19. CD 4/26.



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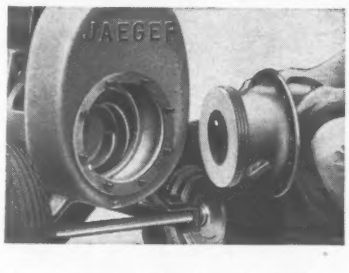

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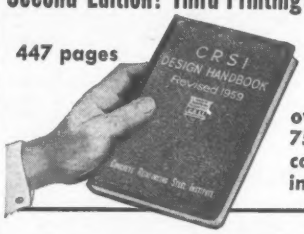

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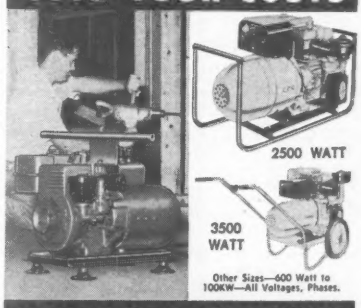

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BUILDINGS—LB & CA

▲ **Depot Constr. Corp.,** 42-15 Crescent St., Long Island City, N. Y., LB **$3,593,000,** general contract, Bldg. No. 5, Dept. of P. Wks., N.Y. State Employees' Retirement System, ALBANY, N. Y. State Dpt. P. Wks., State Office Bldg., Albany 1, N. Y. Bids May 18. CD 4/5.

▲ **Dworman Assocs.,** 400 Park Ave., New York, N. Y., Owner Builds, **$4,000,000,** 20 story OFFICE and APARTMENT, 200 East 58th St. at 3rd Ave., NEW YORK, N. Y. William Lescaze, 211 East 48th St., New York, N. Y., archt. CD 5/9.

▲ **Thomas Constr. Co.,** 165 Haledon Ave., Paterson, N. J., CA **$2,816,000,** general contract HIGH SCHOOL, CLIFTON, N. J. City, City Hall, Clifton, N. J. CD 12/24, under LB.

▲ **W. J. Happel & Co.,** 589 Central Ave., East Orange, N. J., Owner Builds, **$200,000,000** 6,000 HOMES, apartments, shopping center, industrial park, MADISON, N. J., B.B.H. Designs Asso., 589 Central Ave. E., Orange, N. J., engr.-archt.

▲ **Arthur Vennerri Co.,** 300 North Ave., Westfield, N. J., LB **$14,179,675,** est. $24,000,000, (5 bidders), general contract, Proj. 2-19 W Kinney HOUSING, NEWARK, N. J. Housing Auth. City of Newark, 75 Sussex St., Newark, N. J. Bids May 19. CD 4/25.

▲ **Povershon Constr. Co.,** 2015 Morris Ave., Union, N. J., Owner Builds, **$1,000,000,** 40 HOUSES, Hickory Rd., NUTLEY, N. J. Peter M. Grygotis, 306 Aldene St., Roselle, N. J., archt.

▲ **Raymond Sachs,** Golf View Rd., South River, N. J., Owner Builds, **$5,000,000,** 250 HOUSES on streets off Highway 18, East Brunswick, OLD BRIDGE, N. J. Gerber & Pancani, 11 Commerce St., Newark, N. J., archts.

▲ **Arthur Venneri,** 300 North Ave., Westfield, N. Y., LB **$2,196,900,** est. $3,304,301, two 9 story APARTMENTS, Cortlandt and Chapman Sts., NJ Proj. 6-3, PERTH AMBOY, N. J. Housing Auth. City of Perth Amboy, 881 Amboy Ave., Perth Amboy, N. J. Bids May 12. CD 4/20.

▲ **Montgomery Constr. Co.,** 803 W. Main St., Grove City, Pa. LB **$1,570,000,** general contract, GYMNASIUM AND FIELD HOUSE for Slippery Rock State College, SLIPPERY ROCK, PA. General State Auth., 18th and Herr St., Harrisburg, Pa. Bids May 18. CD 4/15.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Mayport**—OUTDOOR RECREATIONAL FACILITIES—BA 6/16—Dist. P. Wks. Office, 6th Naval Dist., Bldg. 13, U. S. Naval Base, Charleston, S. C., outdoor recreational facilities, U. S. Naval Station, NBy 16051. $250,000-$500,000. CD 9/6/58.

† **Va., Chantilly**—REMOTE COMMUNICATION FACILITIES—BA 6/16—Federal Aviation Agency, Federal Bldg., New York International Airport, Jamaica, N. Y., 2 remote communication facilities, Dulles International Airport, IFB 1-60-1042B1. CD 5/27/58.

† **Louisiana**—BA 6/23—U. S. Eng., foot of Prytania St., New Orleans, Foreshore Protection, Mississippi River, Belair Levee, Item M-66.4-L; Wood Park-Deer Range Levee, Item M-56.0-R; Harlem Levee, Item M-56.0-L; and Pointe Celeste Levee, Item M-52.3-R, Serial No. CIVENG 16-047-60-206. $100,000. Plans deposit $1. CD 9/29/59.

BUILDINGS—BA

▲ **Fla., Orlando**—BANK—BA 6/15—Florida National Bank, c/o James Gamble Rogers, Lovelock & Fritz, archt.-engrs., 145 Lincoln Ave., Winter Park. Florida National Bank, 800 Block, N. Orange Ave. $1,000,000. Plans deposit $96. CD 5/18.

HEAVY CONSTRUCTION—LB & CA

▲ **LOUISIANA**—State Hy. Dpt., Rm. 426, Headquarters Admin. Bldg., Baton, Rouge,

Peter Kiewit Sons Co., 1024 Omaha National Bank, Omaha, Neb., CA **$3,187,755** composite and welded plate girder spans and related work 0.205 mi. Ouachita River Bridge on Monroe-West Hy., Rte. 1-20. SP 45-06-06 FAR No. I-20-3(11) 115, Ouachita Parish. Bids Apr. 20 CD 4/25 under LB.

▲ **Pittman Constr. Co.,** Box 8116, New Orleans, La., LB **$1,038,900** (8 bidders) four rein.-con. STADIUMS, two for East Jefferson Senior High School and two for West Jefferson Senior High School, GRETNA, LA. Jefferson Parish School Bd., Gretna, La. Cimini & Meric, 822 Persido St., New Orleans, La., archts. CD 3/4/59 under Public Buildings.

▲ **Bauer Dredging Co.,** Port Lavaca, Tex., CA **$1,817,550.** placing approx. 1,710,000 cu. yd. hydraulic fill approx. 100,000 cu. yd. fill by clam shell dredge and 4,500 lin. ft. creosoted wooden wakefield type bulkhead adjoining New Orleans Airport, NEW ORLEANS, LA. Orleans Parish Levee Dist., Rm. 200, Royal & Conti Sts., New Orleans, La. Bids Apr. 12 CD 4/20 under LB.

BUILDINGS—LB & CA

▲ **Paul Tishman Co., Inc.,** 21 E. 70 St., New York, N.Y., CA **$1,862,657,** CENTRAL LIBRARY, NORFOLK, VA. City, P. Wks. Dpt., City Hall, Norfolk, Va. Bids May 13. Awarded May 18. CD 5/19 under LB.

▲† **Blount Bros. Constr. Co.,** 79 Commerce St., Montgomery, Ala., LB **$2,957,000,** (6 bidders) extending, remodeling POST OFFICE, PARKERSBURG, W. VA. General Services Admin., Public Bldgs. Service, Rm. 7122, Regional Office Bldg. 7 and D Sts., SW, Wash. 25, D. C. Robert J. Bennett, Monongahela Bldg., Morgantown, W. Va., archt. Bids May 18. CD 4/20.

▲† **Algernon Blair, Inc.,** 1st National Bank Bldg., Montgomery, Ala., CA **$1,189,527** SPECIAL SERVICE BLDG. No. 119, Gulfport Hospital Division (NP) Veterans Admin. Center, BILOXI, MISS. Veterans Admin., Munitions Bldg., Wash., D. C. Bids May 10 CD 5/12 under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Wis., Almond—BA 6/21—Village, Village Hall, sanitary sewers, lift station, sewage lagoon. Plans deposit $15. Davy Engr. Co., 525 Main St., La Crosse, engr. CD 4/23/59.

BUILDINGS—BA

Ill., Watseka—HIGH SCHOOL—BA 6/15—High School Dist. No. 250, high school addn., $450,000. Childs & Smith, 20 N. Wacker Dr., Chicago, Zone 6, archts. CD 3/2.

▲† **Ill., Savanna**—SPECIAL WEAPONS SUPPORT FACILITIES—BA about 6/22—U.S. Eng., 536 S. Clark St., Chicago, Zone 5, Special weapons, support facilities, utilities, site work, Savanna Ordnance Depot ENG-11-032-60-117, $1,000,000. CD 3/10, under LB.

HEAVY CONSTRUCTION—LB & CA

▲ **A. Bentley & Sons Co.,** 201 Belmont Ave., Toledo, O. LB **$1,321,840,** Alt. LB **$1,117,251,** Stage II, Contract No. 2, bulkhead constr. Presque Isle dock on Maumee River incl. 2,100 lin. ft. steel sheet pile bulkhead, 77,000 cu. yd. dredging for filling, 18,000 lin. ft. steel piling, TOLEDO, O. Toledo-Lucas Co. Port Authority, 241 Superior St., Toledo, O. Bids May 17. CD 4/25.

▲ **S. J. Groves & Sons Co.,** 7040 Lee St., Des Plaines, Ill. LB **$5,986,734** (7 bidders) entrance road, O'Hare International Airport, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids May 23. CD 5/12.

William Adams Engineers Inc., 3911 W. North Ave., Chicago, Ill., CA **$807,687** (6 bidders) YYA, mechanical equipment, piping for wet oxydization plant, West Southwest Sewage treatment works, Stickney, CHICAGO, ILL. Metropolitan Sanitary Dist. of Chicago, 100 E. Erie St., Chicago, Ill. Bids Apr. 28. Awarded May 19. CD 5/9 under LB.

BUILDINGS—LB & CA

▲ **Roediger Constr. Co.,** 1729 Superior Ave., Cleveland 14, O., CA **$1,276,166** est. $1,500,000 COUNTY NURSING HOME imprvts., CLEVELAND, O. Bd. Comrs., Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Cleveland 13, O. Bids Mar. 31. Awarded May 19. CD 4/8 under LB.

▲ **A. W. Heinson & Co.,** 103 E. Park, Mundelein, Ill., CA Est. **$1,500,000,** general contract, 2 story, 144,000 sq. ft. PRINTING PLANT, BROWN DEER (Milwaukee P.O.), WIS. Wisconsin Cuneo Press, 329 E. Chicago St., Milwaukee, Wis. CD 5/4.

▲ **Hamilton Co.,** 1720 Section Rd., Cincinnati, O., LB **$3,191,900,** (6 bidders), HOUSING project, CINCINNATI, O. Cincinnati Metropolitan Housing Authority, 595 Armory St., Cincinnati, O. Bids May 17. CD 4/6.

▲ **North Star Homes, Inc.,** 20515 Shaker Blvd., Cleveland 22, O., Own Forces, **$6,000,000,** 372 HOMES, Northfield Sq. Project, NORTHFIELD, O. Glazer-Marotta Co., 20515 Shaker Blvd., Cleveland 22, O., archts.

▲ **W. P. Pate Constr. Co.,** 5194 W. Park Dr., North Olmsted, O., Own Forces, **$2,200,000,** 100 HOMES, Deving, Tudor, Berkshire and Hampton Dr., NORTH OLMSTED, O.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

† **Texas** — BA 6/15 — Soil Conservation Service, First Natl. Bank Bldg., Box 417, Temple, Tex., floodwater retarding structures, with earthfill embankments, Sites 33 and 33A, Chambers Creek of Trinity River, Alvarado, Johnson Co., SCS-46-TX-60.

† **N. M., Roswell**—NIKE-HERCULES FACILITIES, etc.—BA About 6/16—U. S. Eng., P.O. Box 1538, Albuquerque, Nike-Hercules facilities, landscaping, dust and erosion control, Walker Air Force Base Defense Area, ENG-29-005-60-98. $25,000. Plans deposit $1. CD 1/29.

† **Texas** — BA 6/16 — Soil Conservation Service, First Natl. Bank Bldg., Box 417, Temple, floodwater retarding structures with earthfill embankments, Site 21, Gageby Creek of Upper Washita River, Briscoe, Wheeler Co., SCS-47-TX-60.

† **Tex., Fort Hood**—STORAGE, etc.—BA 6/22—U. S. Eng., P.O. Box 1229, Galveston, aircraft parts storage bldg. and control tower, ENG-41-243-60-40B. CD 5/23, under Public Buildings.

† **Tex., Lubbock**—POWER—BA about 6/23—U.S. Eng., Box 1600, Fort Worth, Tex., emergency power, Reese Air Force Base, ENG-41-443-60-39. $50,000. CD 9/17/57.

† **Missouri**—BA 6/23—U.S. Eng., Clock Tower Bldg., Rock Island, Ill. Fabius River Drainage District flood control Proj., Stage III, Mississippi River, Marion Co., CIVENG-11-117-60-30. $300,000. CD 9/29/59.

† **Tex., El Paso**—RANGE FACILITIES—BA about 6/24—U. S. Eng., Box 1538, Albuquerque, N. M., range facilities incl. one M/A and test bldg., approx. 26x85 ft., one battalion headquarters and supply bldg., approx. 24x81 ft., two BOQ bldgs., approx. 20x148 ft., two H-shaped barracks with two wings each approx. 25x110 ft. core approx. 26x40 ft., one motor repair shop approx. 30x66 ft. one oil house approx. 10x20 ft. one concrete wash rack approx. 20x30 ft., one grease rack approx. 16x128 ft., hot mix paving, utilities incl. water, sewer, gas storm drainage and electrical work, Fort Bliss Eng. 29-005-60-97, approx. $500,000. Plans deposit $6.30 half-size, $10. full size. CD 9/25/59.

† **Texas**—BA about 6/28—U.S. Eng., Box 1600, Fort Worth, south access road, Proctor Reservoir, Lean River, ENG-41-443-60-57, $150,000. CD 9/15/59.

† **Tex., Marshall**—ADMINISTRATION ADDN.—BA about 7/6—U.S. Eng., P.O. Box 867, Little Rock, Ark., Administration Bldg. 703 addn., telephone bldg. 702 addn., Longhorn Ordnance Works, ENG-03-050-60-57, $200,000. Plans deposit $3.20. CD 8/25/52.

BUILDINGS—BA

† **Tex., El Paso**—STORM DRAINAGE—BA About 6/22—U. S. Eng., Box 1538, Albuquerque, N. M., approx. 7,600 ft. concrete lined drainage channel, 4,500 ft. unlined drainage channel, 1,770 ft. 36 in. storm drains, twelve box culverts, one 450x300x10 ft. deep storm catch basin, lowering utilities, one storm sewer pump lift station with approx. 1,340 ft. of 14 in. pressure discharge line, Second Increment, Fort Bliss, ENG-29-005-60-99. $400,000. Plans deposit $1.50 half-size, $7.50 full size. CD 9/25/59.

† **Tex., El Paso**—REGIMENTAL CHAPEL—BA 6/28—U. S. Eng., Box 1538, Albuquerque, N. M., regimental chapel, Fort Bliss, ENG-29-00-60-100B. Plans deposit $10. CD 9/25/59.

HEAVY CONSTRUCTION—LB & CA

▲ **Lindberg Constr. Co.,** 900 2nd St. NE, Jamestown, N. C., CA **$1,329,905,** fndns., furnishing, erecting steel towers for 80 mi. Jamestown-Fargo 230kv transmission line No. 2, Missouri River Basin Proj. DC 5290 NORTH DAKOTA, Bureau Reclamation, Dpt. Interior, Fargo, N. D. Bids Apr. 26. CD 5/3, under LB.

▲† **English Electric Export & Trading Co., Ltd.,** 750 3 Ave., New York, N. Y., LB **$1,075,547,** two 41,300 HP hydro turbines, McGee Bend Dam, TEXAS. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. CD 9/28.

▲ **Hoosier Engineering Co.,** 1350 Holly St., Columbus, O., CA $5,000,000, 90 mi. high-power electrical transmission line, incl. 425 steel towers, from Helena to Pine Bluff, ARKANSAS. Arkansas Power & Light Co., 9 and Louisiana Sts., Little Rock, Ark.

BUILDINGS—LB & CA

▲ **W. M. C. Inc.,** 303 Winona St., Winona, Minn., LB **$1,568,700,** (10 bidders), 90,000 sq. ft. HOSPITAL, WINONA, MINN. Community Memorial Hospital, Winona, Minn. Bids May 17. CD 4/27.

▲ **B. Sweetser,** 409 W. Dickson St., Fayetteville, Ark., LB **$1,477,777,** est. $1,672,000 (7 bidders), 10 story, male student DORMITORY, FAYETTEVILLE, ARK. University of Arkansas, Fayetteville, Ark. Bids May 18. CD 5/3.

▲ **Clement & Norfleet,** 111 N. 7 St., West Memphis, Ark., Owner Builds, **$1,000,000,** 420 HOMES, Horseshoe Lake near HUGHES, ARK.

▲† **Westinghouse Electric Corp.,** 117 N. 13th St., Omaha 2, Neb., CA **$7,041,088,** furnish, install and test eight 61,579 KVA generators, Big Bend Dam, Fort Thompson, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Apr. 13. CD 4/15, under LB.

Carrothers Constr. Co., Paola, Kan., LB **$329,104,** est. **$337,700,** Part I, sewage treatment, structures, equipment, interconnecting piping, water supply well, new pumps, controls, wiring sewage pump station, Kearney airport sewer sys., etc., Part II, lagoon for airport sewage sys., KEARNEY, NEB., City, City Hall, Kearney, Neb., Bids Apr. 27. CD 4/7.

▲ **Fullen Constr. Co.,** 315 W. Railroad Ave., Scottsbluff, Neb., LB **$1,524,000,** 141,000 sq. ft., campus type senior HIGH SCHOOL, SCOTTSBLUFF, NEB., Bd. Educ., Scottsbluff, Neb. Bids May 11. CD 4/28.

▲ **McFadden & Miller,** 4310 Westside St., Dallas, Tex., CA **$1,000,000,** 1 unit, 95,900 sq. ft. SHOPPING CENTER, DALLAS, TEX. Trammel Crow, 425 S. Field St., Dallas, Tex. Harold A. Berry, Penthouse, Hartford Bldg., Dallas, Tex., archt. CD 2/2.

▲† **S. S. Silberblatt Co.,** 25 W. 45 St., New York, N. Y., LB **$12,119,400** (8 bidders), 800-units Capehart HOUSING, No. 2, FORT HOOD, TEX. U.S. Eng., P.O. Box 1229, Galveston, Tex. Bids May 18. CD 4/27.

▲ **Tellepsen Constr. Co.,** 1710 Telephone Rd., Houston, Tex., CA **$6,164,600,** HOSPITAL, HOUSTON, TEX. Methodist Hospital, Texas Medical Center, 6516 Bertner St., Houston, Tex. Bids May 10. CD 5/16, under LB.

▲ **F. J. Kirchhof Constr. Co.,** 700 Lawrence St., Denver, Colo., LB **$1,000,000,** 2 story PAPER PLANT expansion, DENVER, COLO. The Denver Post, 15th and California St., Denver, Colo. Bids May 17. CD 5/4.

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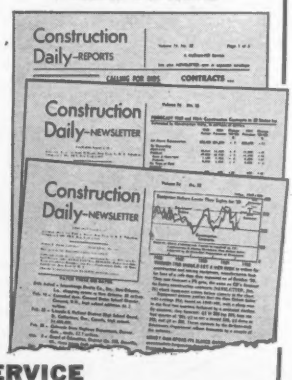

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FAR WEST

HEAVY CONSTRUCTION—BA

† **Ariz., Ajo**—OPERATIONS BLDG. ADDN.—BA 6/14—U.S. Eng., 751 S. Figueroa St., Los Angeles, Calif., operations bldg. addn., Luke-Williams Air Force Station, ENG-04-353-60-95.

▲ **Calif., Santa Rosa**—GRANDSTAND—BA 6/14—Sonoma County, Courthouse, rein.-con. and prestressed concrete, steel roof decking and trusses grandstand, Sonoma County Fairgrounds. $1,200,000. Plans deposit $50. J. Clarence Feiciano, P.O. Box 424, Santa Rosa, Calif., archt. CD 6/10/59 under Calif., Sonoma.

▲† **Alaska**—TOWER STRUCTURE, etc.—BA 6/15—U. S. Eng., P. O. Box 7002, Anchorage, tower structure, roadwork, replace floor, slabs and roof repairs, Alaska Air Command Stations, Fire Island, King Salmon and Indian Mountain. Inv. 60-19. Over $1,500,000. Plans deposit $4.50. CD 9/28/59.

† **Arizona**—BA 6/15—Bureau Reclamation, Dpt. Interior, Phoenix, carrier-current supervisory control and telemetering equipment and unmounted equipment for Gila substation, Wellton-Mohawk pumping plant, and Parker powerplant, Parker-Davis project, 3045-116. CD 9/17/57 under Arizona-California-Nevada.

Calif., Escondido—BA 6/15—City, 100 Valley Blvd., 6 to 10 in. ACP water distribution sys., Valley Blvd., Rose St., Midway Dr. Plans deposit $10. Roy L. Kelma, 415 Hale Ave., Escondido, Calif., engr.

† **Washington**—BA 6/15—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, 5,700 cu. yd. levee embankment at Union Slough, Snohomish River, Snohomish Co. CIVENG-45-108-60-41. Plans deposit $1. CD 9/10/57.

Hawaii, Honolulu—GRADING, ETC.—BA 6/16—State Office P. Wks., Punchbowl and Queen Sts., Honolulu, grading, paving aprons and installing utilities, International Airport, Stage 6, Job 5883-6, F.A.A. 9-52-007-6004. Plans deposit $100. Law & Wilson, 441 N King St., Honolulu, engrs.

† **Washington**—BA 6/17—Chelan Co. Public Utility Dist., 327 N. Wenatchee Ave., Wenatchee, river gaging station, Columbia River at Rocky Reach Dam. Plans deposit $25. Stone & Webster Engr. Corp., Lloyd Bldg., Seattle, Zone 1, engr. CD 2/2/55.

▲† **Hawaii**—NIKE-HERCULES—BA On Or About 6/22—U. S. Eng., Bldg. 96, Fort Armstrong, Honolulu, Zone 13, Nike-Hercules, Control Sites Nos. 3 and 4, Oahu, ENG-94-61-260-20. Est. $2,000,000.

† **California**—BA 6/23—U. S. Eng., 1209 8 St., Sacramento, dredging 132,000 cu. yds. Sacramento River, Y St. Bend to Bryte Bend and mouth of America River, Sacramento Co., ENG-04-167-60-56, $100,000. Plans deposit $3. CD 10/1/59.

† **Washington**—BA 6/23—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, 42 x 86 ft. rein.-con. machine shop, Chief Joseph Dam, Bridgeport, CIVENG 45-108-60-42. $100,000. Plans deposit $1. CD 9/10/57.

† **Calif., Beale Air Force Base**—GROUND-AIR TRANSMITTER, etc.—BA 6/24—U. S. Eng., 1209 8th St., Sacramento, ground-air transmitter, receiver facility and antenna park, Beale Air Force Base, near Marysville, Spec. 2582A, ENG-04-167-60-42. $100,000. Plans deposit $10. CD 9/9/58.

† **Calif., Red Bluff**—GROUND-AIR TRANSMITTER, etc.—BA 6/24—U. S. Eng., 1209 8th St., Sacramento, ground-air transmitter receiver facilities, antenna farm, Red Bluff Air Force Station, Spec. 2583A, ENG-04-167-60-43. $100,000. Plans deposit $10. CD 7/2/59.

Wash., Tacoma—BA 6/27—City, City Hall, spillway and arch dam bridges, Mayfield Dam. CD 11/9/54.

BUILDINGS—BA

† **Wash., Fort Lawton**—AUTO MAINTENANCE SHOP—BA 6/14—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, 36 x 108 ft. masonry auto maintenance shop, AN/FSG-1 Tactical facilities, ENG-45-108-60-130, $75,000. Plans deposit $1. Advanced date. CD 5/12.

California—SAND STORAGE BLDG., etc.—BA 6/15—State Div. Hys., 1120 N St., Sacramento, sand storage bldg., Div. Hys. Echo Summit Maintenance Station, US Hy. 50 west of Meyers, El Dorado Co. III-E.D.-Echo Summit Maintenance Station; sand storage bldg., US Hy. 40 alternate about 5.3 mi. east of Chilcoot, Lasen Co. II-Las-21-A.; 28x170 ft. concrete block combination shop-garage-storage bldg. and 14x57 ft. flammable storage bldg., electrical facilities at Div. Hys. Napa Maintenance Station, Napa Co. IV-Nap-Napa Maintenance Station: sand storage bldg., State Sign Rte. 36 about 16.2 mi. east of Mineral, Tehama Co. II-Teh-29-C.

Calif., Whittier—DORMITORY—BA 6/15—State Div. Hys., 1100 S. Grand Ave., Los Angeles, two 1-story, brick, concrete and steel dormitory, W.O. 4314GC-13. $465,000. Plans deposit $25. CD 8/7/59.

† **Calif., Fort Ord**—AVIATION FACILITIES—BA About 6/21—U. S. Eng., 180 New Montgomery St., San Francisco, aviation facilities, Phase II, fire and rescue station, unit operations bldg., field operations bldg., flight simulator bldg., flight control tower. $400,000. Plans deposit $7.80. CD 9/8/58.

▲ **Alaska, Anchorage**—SCHOOL — BA 6/28—Anchorage Independent School Dist., 1602 Hillcrest Dr., Spenard Branch, P.O., Anchorage, 140,000 sq. ft. East Anchorage High School $3,000,000. Plans deposit $50. Manley & Mayer, architects, 210 Loussac-Sogn Bldg., Anchorage, archts. Worthington, Skilling, Helle and Jackson, Lloyd Bldg., Seattle, Wash., engrs. Paul Crews, 545 E. 4 Ave., Anchorage, mech. engr. CD 3/15.

HEAVY CONSTRUCTION—LB & CA

▲ **NEVADA**—Directors, State Dpt. Hys., State Hy. Bldg., Carson City,
Silver State Constr. Co., Fallon, Nev., CA **$3,694,175** constr. 12.685 mi. Interstate Rte. 80, between West of Golconda and East Foot of Golconda Summit, Humboldt Co. Bids May 19. Awarded May 19. CD 4/29.

▲ **C. V. Wilder Co.**, 1840 State St., Bellingham, Wash., LB **$1,086,700**, est. $1,139,855, (10 bidders), 50,000 ft., 40 in. concrete water supply pipeline from middle fork of Wooksack River, BELLINGHAM, WASH., City, City Hall, Bellingham, Wash., Bids May 18. CD 4/28.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Griffith Co., 1060 S. Broadway, Los Angeles, Calif., CA **$6,898,595**, 1.2 mi. eight lane elevated freeway on Santa Monica Freeway between Main St. and Hooper Ave. in Los Angeles, incl. ramps and frontage roads, Los Angeles Co. Bids May 5. CD 5/10 under LB.

▲† **George M. Brewster & Son, Inc.**, 275 West Fort Lee Rd., Bogota, N. J., CA **$5,368,695**, earthfill main dam, six earthfill dikes and appurtenances, Black Butte Dam Project, Stony Creek 10 mi. from Orland, Tehama Co. Spec. 2640, ENG-04-167-60-25, CALIFORNIA. U.S. Eng., 1209 8th St., Sacramento, Calif. Bids May 10. Awarded May 20. CD 5/12, under LB.

▲† **Clyde W. Wood & Sons, Inc.**, 6900 Tujunga Ave., North Hollywood, Calif., CA **$1,045,396**, Bautista Creek Channel imprvt. Santa Ana River Basin near Huntington Beach. CIVENG-04-353-60-30, CALIFORNIA. U.S. Eng., 1800 New Montgomery St., San Francisco, Calif. Bids May 17. CD 5/19, under LB.

▲† **A. Teichert & Son, Inc.**, 15534 East Cypress Ave., Baldwin Park, Calif., CA **$1,536,882** channel imprvts. Little Dalton Wash, Lorain Ave. to Fifth St. CIVENG 04-353-60-23, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 20. CD 4/22 under LB.

▲ **Pacific Bridge Co.**, Fort Sherman St., Alameda, Calif., CA est. **$1,250,000**, marina, motel, swimming pool, ALAMEDA, CALIF. Pacific Marina Corp., c/o Contractor. Campbell & Wong, 737 Beach St., San Francisco, Calif., archts.

▲ **Piombo Constr. Co.** and **M & K Corp.**, P.O. Box 607, San Carlos, Calif., LB **$1,570,119** (7 bidders) 165 ft. high earth and rockfill Stumpy Meadows Dam near Georgetown for new water distribution project, Schedu'e A, GEORGETOWN, CALIF. Georgetown Divide Public Utility Dist., Georgetown, Calif. Bids May 19. CD 4/27;

▲† **M. M. Sundt, M. J. Bevanda and Altermatt-Action Ventures**, P. O. Box 439, North Hollywood, Calif., CA **$4,489,103**, est. $5,073,200, roads and utilities, Point Arguello Naval Missile Facility, Spec. 24954, POINT MUGU, CALIF. Dist. P. Wks. Office, 11th Naval Dist., 1220 Pacific Hy., San Diego 1, Calif. Bids May 10. CD 5/13, under LB.

▲ **North Bay Constr. Co.**, 560 Boyd St., Santa Rosa, Calif., LB **$1,107,500**, (6 bidders), sewage treatment plant, sedimentation, unit, sludge pump, digestion tanks, primary and secondary, garage and shop, RICHMOND, CALIF. City, City Hall, Richmond, Calif. Kennedy Engrs., 604 Mission St., San Francisco, engrs. CD 12/14/56.

▲† **Premier Gear & Machine Works**, 1700 NW Thurman, Portland, Ore. and **H & K Constructors**, Spenard, Alaska, CA **$1,294,820** communication facilities, Nikolski Air Force Station, Umnak Island (Aleutians), Inv. 60-48, ALASKA. U. S. Eng., P. O. Box 7002, Anchorage, Alaska. Bids May 10. CD 5/12 under LB.

▲ **Oahu Constr. Co., Ltd.**, 905 Kokea St., Honolulu, Hawaii, LB **$1,570,292**, (5 bidders), site preparation and utilities and 5 m.g. reservoir, HONOLULU, HAWAII. Bishop Estate, 515 Halekauwila St., Honolulu, Hawaii. Bids May 18. CD 5/11.

BUILDINGS—LB & CA

▲ **M. Morin & Son**, 473 W. 2 St., Ogden, Utah, CA **$2,100,735**, senior high SCHOOL, BRIGHAM CITY, UTAH. Box Elder Co. Bd. Educ., Brigham City, Utah. Bids Apr. 27. CD 5/18, under LB.

▲ **Sceva Constr. Co.**, N. 2928 Modelia St., Spokane, Wash., CA **$1,010,948**, general contract, 112,421 sq. ft. masonry and rein.-con. Northwest JUNIOR HIGH SCHOOL, SPOKANE, WASH. School Dist. 81, W. 825 Trent Ave., Spokane, Wash. Bids May 4. CD 5/11, under LB.

▲ **Waldo S. Haride & Son**, 305 Taylor St., Eugene, Ore., LB **$1,139,657** (5 bidders) DORMITORY No. 4, University of Oregon, ENGENE, ORE. State Bd. Higher Educ., P.. Box 5175, Eugene, Ore. Bids May 17. CD 4/27.

▲ **S. H. Johnson & Son, Inc.**, 901 Ina Dr., Alameda, Calif., CA **$2,250,000**, 100 frame, stucco HOUSES, Rose Glenn Subdivision, CONCORD, CALIF. Owner, c/o Contractor.

▲ **Barnhart Constr. Co.**, P.O. Box 127, Santa Clara, Calif., LB **$1,995,365** (6 bidders), 1 story, 100,000 sq. ft. glu-lam beam and wood structure Chester F. Awalt HIGH SCHOOL, Truman Oak Site, MOUNTAIN VIEW, CALIF. Mountain View Union High School Dist., P.O. Box 1087, Mountain View, Calif. Bids May 18. CD 4/25.

▲ **Conejo Valley Development Co.**, Thousand Oaks, Calif., Owner Builds, **$1,657,800**, 114 stucco DWELLINGS, Tract 1244, Meadows No. 3, THOUSAND OAKS, CALIF.

▲ **Walker-Moody Constr. Co. Ltd.**, 2927 Mckumoa, Honolulu 17, Hawaii, CA **$1,153,540**. JAIL, Halawa, HONOLULU, HAWAII. City and Honolulu Co., City Hall, Honolulu, Hawaii. Bids Apr. 7. Awarded Apr. 29. CD 4/13, under LB.

CANADA

HEAVY CONSTRUCTION—BA

Ont., Ottawa—BA 6/14—City, City Hall, approx. 7,200 ft. sewer tunnel with 8 in. diam., Gloucester Twp. east of Skead Rd. Over $100,000. Plans deposit $75. DeLeuw Cather & Co. of Canada, 226 Sparks St., engr. CD 8/24/49.

BUILDINGS—BA

▲ **Alta., Balzac**—PLANT—Bids Asked—Jefferson Lake Petrochemical of Canada Ltd., 202-133 6th Ave. SE, Calgary, (selected list of bidders) gas processing and sulphur plant, $6,000,000.

▲ **N. S., New Waterford**—HOSPITAL, etc.—BA 6/17—New Waterford Dist. Consolidated Hospital Comn., hospital and nurses home, Maple Hill, **$1,100,000**. Gregory Lambros & Keity L. Graham, 53 Spring Garden Rd., Halifax, archts. CD 3/20, under Town of New Waterford as owner.

HEAVY CONSTRUCTION—LB & CA

▲ **Swansea Constr. Co. Ltd.**, 363 Rogers Rd., Toronto, Ont., LB **$1,237,974**, (15 bidders), major grade separation and interchange at junction of Bloor and Dundas Sts. W. and Kipling Ave., incl. grading, drainage, asph. paving on concrete base, lighting, retaining walls, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids May 17. CD 5/2.

▲ **Orsini Constr. Ltd.**, 363A Rogers Rd., Toronto, Ont., CA **$3,116,874**, rein.-con. structural steel structure from Station 218/93.64 to Station 237/18/60, Strachan Ave., Frederick G. Gardiner Expressway, Contract R-3-60, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids May 6, awarded May 18. CD 5/12, under LB, Streets and Roads.

▲ **Dutton-Williams Bros. Ltd.**, 3rd fl., North Canadian Oil Bldg., Calgary, Alta., CA **$1,125,000**, 36.7 mi. 8⅝ in. oil pipe line extension, extending from Fox Creek Station Peace River System, ALBERTA. Peace River Oil Pipe Line Co. Ltd., 320 7th Ave. W., Calgary, Alta. CD 6/23.

BUILDINGS—LB & CA

Canadian Badger Co. Ltd., 37 King St. E., Toronto, Ont., subsidiary of Badger Mfg. Co., 230 Bent St., Cambridge, Mass., U.S.A., CA, Phase II, field constr. ethyl chloride ethylene dichloride PLANT, CORUNNA, ONT. Ethyl Corp. of Canada Ltd., 48 St. Clair W., Toronto, Ont.

▲ **North York Bd. Educ.**, 15 Oakburn Crescent, Toronto, Ont., cancelled bids to have been opened June 9, SENIOR HIGH SCHOOL, Old Weston Rd., TORONTO, ONT. Henry Fliess & James A. Murray, 224 Merton St., Toronto, Ont., archts. Reicher, Bradstock & Assocs., Ltd., 600 Eglinton Ave. E., Toronto, Ont., engrs. Will re-advertise. CD 5/19.

▲ **Leon M. Adler**, 2200 Ward Ave., St. Laurent, Que., LB **$1,460,775**, Jeanne Mance low rental HOUSING, St. Dominique, Ontario, Sangauiet Sts. and rear of St. Catherine St., MONTREAL, QUE. City, City Hall, Montreal, Que. Bids May 17. CD 5/2.

▲ **Laflamme & Lafleur**, 97 S. Notre Dame St., Thetford Mines, Que., CA **$1,150,000**, ARTS and TRADES SCHOOL, Valle Ave. and Fortier St., PLESSISVILLE, QUE. Provincial Dpt. Youth & Social Welfare, Parliament Bldgs., Quebec City, Que. Awarded May 13. CD 10/3/58.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **Costa Rica, San Jose**—BA 6/15—Gobernador de la Provinca, Ejecutive Municipal, San Jose, water sys. $3,000,000. Rader & Assocs., 111 N.E. 2nd St., Miami, Fla. U. S. A. prepared preliminary report. All plans prepared in San Jose where specifications are obtainable. (Correction—Status of engineers). CD 5/4.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Australia**—BA 7/5—Dpt. P. Wks., Perth, Western Australia, Ord River Diversion Dam Project, Bandicoot Bar. Extended date. CD 1/7.

Thailand—Bids in August—Royal Irrigation Dpt. of the Kingdom of Thailand, Bangkok, constr. and installing 230 KV transmission line from city of Bangkok to Bhumiphol Hydroelectric Power Plant, Thailand, for the Yanhee Multipurpose Proj. Bids No. YSC-3-2, Plans deposit $25. Engineering Consultants, Inc., 1901 South Navajo St., Denver 23, Colo., U. S. A., engrs. CD 1/23/58.

BUILDINGS—BA

▲ **Germany, Berlin**—OFFICE—BA 8/1—Deutscher Ring A. G., K Muck-Platz 1, Hamburg, 14 story office. $1,400,000. Theodor Kelter, BDA, Hohenzollernring 103, Koln, Germany, archt. Fa. Karl Roethele, Rudesheimer Str. 29, Berlin, Germany, engrs.

PROPOSED PROJECTS

WATER SUPPLY

Ill., Chicago—Dpt. Purchases, City Hall, Zone 2, WW, Central Dist. Filtration Plant, exterior piping, $3,000,000, Bids in December, misc. pumps and wash water piping, $350,000, Bids in July. George S. Salter, ch. design engr. CD 1/30/51.

Ill., Dixon—City, City Hall, voted bonds WW imprvts. $650,000. C. K. Willett, 317 N. Galena Ave., consult. engr. (Correction—Status). CD 5/5.

Ill., Loves Park—City, City Hall, WW, filtration plant. $132,000.

Wash., East Wenatchee—East Wenatchee Water Dist., water sys. extension, Proj. No. P-Wash-3074, $500,000. Constr. in 1961.

SEWERS, WASTE DISPOSAL

▲ Ill., Decatur—Decatur Sanitary Dist., 501 Dipper Lane, interceptor sewer expansion (First Phase 1960, $540,000) $3,000,000. Warren & Van Praag, Inc., 253 S. Park St., consult. engrs. CD 4/4/50.

Ill., Forest Park—Village, Village Hall, storm sewers, south side. $800,000.

Ind., Crown Point—Lake Co., Court House, sanitary sewers, Crown Point and Cedar Lake, $850,000.

▲ N. J., Basking Ridge P.O.—Bernards Twp. Sewer Auth., Town Hall, Lyons Rd., interceptor plant expansion and installation of mains and laterals, Bernards Twp. $1,500,000. Elson Killam Assoc., Millburn, N. J., engrs. CD 1/31/58.

N. J., Morristown—Morris Twp., Municipal Bldg., 18 Mendham Rd., township sewerage sys. $500,000. A. P. Couvrette, 18 Mendham Ave., engr.

▲ O., Cleveland—Bd. Comrs. Cuyahoga Co., County Admin. Bldg., 1219 Ontario St., Zone 13, sewer plant expansion, Rocky River, Bay Village and Fairview Park. $3,000,000. Willard Schade & Assocs., Chester 12th Bldg., Zone 14, consult. engrs.

R. I., East Providence—City, City Hall, sewerage interceptor sys., activate sewers connecting with Blackstone Valley Authority Plant. $951,000. Charles Maguire & Assocs., 1100 Turks Head Bldg., Providence, engrs.

Tex., Grand Prairie—Louis J. Hexter & Assocs, 1312 Main St., Dallas, sanitary sewers, $100,000; storm sewers, $95,000.

▲ Wash., East Wenatchee—East Wenatchee Sewer Dist., sanitary sewer sys., $2,350,000. Constr. next year. Gray & Osborne, 228 S. 2 St., Yakima, consult. engrs. CD 10/9.

BRIDGES

Ill., Chicago—City, City Hall, redecking W. Cermak bridge over South Branch Chicago River. $400,000. CD 6/10/57.

▲ Wash., Tacoma—City, City Hall, viaduct over Nalley Valley. $1,000,000. M. Calkins, c/o owner, city engr.

QUEBEC—Provincial Dpt. P. Wks., Parliament Bldgs., Quebec City,
Magog—bridge over Magog River. $250,000.

STREETS AND ROADS

▲ CONNECTICUT—State Hy. Dpt., 24 Wolcott Hill Rd., Wethersfield,
Canterbury and Plainfield—Proj. 22-60, reconstr. Rte. 14 from Westminster to Exley Rd. $600,000. Bids in 1960.
Hartford and Wilson—widen Veterans Hy. Rte. 5A from 4 to 6 lanes from Morgan St. Interchange north to Wilson. $1,500,000.

Ill., Salem—Bd. Comrs. Marion Co., Courthouse, paving 6 mi. Walnut Hill Rd. west of Centralia, $300,000; bit. resurf. 2 mi. Kell Rd., $100,000.

Tex., Grand Prairie—Louis J. Hexter & Assocs., 1312 Main St., Dallas, hard-paved streets, curbs and gutters. $110,000.

Que., Isle Maligne—Ville de'Isle Maligne, Village Hall, sidewalks and roads, various locations. $165,000.

EARTHWORK, WATERWAYS

▲† Virginia—Piedmont Soil Conservation District, Clayville, watershed protection, Buffalo Creek, 74,700 acres, Prince Edward Co., for Soil Conservation Service. $1,369,673.

LATIN AMERICA

▲ HAITI—Govt. of Haiti, Port au Prince,
124 mi. highway between Port au Prince and Les Cayes. Over $1,000,000. Meissner Engineers, Inc., 130 N. Franklin St., Chicago, Ill., U.S.A., engr.

PUBLIC BUILDINGS

▲ Calif., Livermore—SCHOOL—Livermore Joint Union High School, 600 Maple St., voted bonds May 10, and State Loan, second high school SE Stanley Blvd. $4,000,000. Anderson, Simonds, Dusel & Campini, 2800 Park Blvd., Oakland, Calif., archts. CD 3/18.

▲ Calif., Los Angeles—SCHOOLS—Bd. Educ., 1425 S. San Pedro St., plans by Chambers & Hibbard, 1052 W. 6th St., Valley College addn., 13161 Burbank Blvd., Van Nuys, $3,210,000; plans by A. C. Fernstrom, 920 N. La Cienega Blvd., Los Angeles, Calif. Lockhurst Dr. School, Lockhurst Dr. and Calvert Sts., Canoga Park, $605,000. CD 6/9/58.

▲ Calif., San Diego—SCHOOLS—San Diego Unif. School Dist., 4100 Normal Blvd., Zone 3, plans by Frank L. Hope & Assoc., 1447 6th Ave., San Diego 1, Calif., First Phase, Kearney Mesa Junior College, $4,000,000; 2 story, 34,000 sq. ft. Jefferson elementary school, North Park, $550,000. CD 11/9/56.

▲ Calif., San Jose—SCHOOLS—Moreland School Dist. 4610, Strawberry Park Dr., plans by Kal H. Porter & Assoc., 1760 The Alameda, San Jose, Samuel Curtis Rogers Junior High School, north of Doyle Rd. $1,612,927; Easterbrook Elementary School, $865,747.

▲ Calif., Sunnyvale—SCHOOLS—Fremont Union High School Dist., P.O. Box 215, voted $20,000,000 bonds May 17, and State aid application $10,000,000 for nine high schools. $30,000,000. CD 5/10.

▲ Ill., Chicago—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, plans by Pace & Assocs., 53 W. Jackson Blvd., Zone 4, 288 unit Housing Proj. 2-30 Area II, William Green Homes. $3,400,000. Bids about Dec. 1.

▲ Ill., Chicago—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, plans by Shaw, Metz & Assocs., 208 S. LaSalle St., Zone 4, 566 unit Housing Proj. 2-41, 41st St. and Lake Park. $6,800,000. Bids about May 1, 1961.

▲ Ill., Peoria—SCHOOL—Bd. Educ., Manual Training High School, Russell Field, $3,500,000. CD 4/14.

▲ Mich., Rochester—LIBRARY—Michigan State University, Rochester, plans by Swanson Associates, Bloomfield Hills, 3 story, bsmnt., library $1,500,000. To go ahead 1960. CD 8/13/57.

▲ Mo., Overland (St. Louis 14, P.O.)—SCHOOLS—Ritenour Consolidated School Dist., 9120 Bristol Ave., Zone 14, voted $1,500,000 bonds May 17, senior high school addn. and elementary school addn. $1,500,000. CD 5/11.

▲ Neb., Lincoln — CONVALESCENT HOSPITAL — Bd. Commrs. Lancaster Co., Court House, voted bonds May 10 to use $720,000 from inheritance fund to help finance county convalescent hospital, 2315 S. 17 St., $1,100,000. Craig & Beers, 724 First National Bank Bldg., archts. CD 12/22.

▲ N. H., Dover—HIGH SCHOOL—City, City Bldg., high school, $2,000,000. Constr. in 1961.

▲ N. J., Cranford—HIGH SCHOOL—Bd. Educ. Twp. of Cranford, to be submitted to referendum June 15, bonds and project, high school, $2,600,000. Epple & Seaman, 901 Broad St., Newark, N. J., archts. CD 3/21.

▲ N. J., Ramsey—SCHOOL—Bd. Educ. defeated bonds and project submitted to referendum May 10, 33-room grade school, $1,900,000. Epple & Seaman, 901 Broad St., Newark, archts. CD 3/10.

▲ N. J., Shrewsbury—APARTMENTS—Twp. of Shrewsbury, 111 Belshaw Ave., plans by Benoist & Seymour, 488 Brookdale Rd., Union, N. J., 127 garden apartments, Crawford St., $1,000,000.

▲ Pa., White Haven—HOSPITAL ADDNS.—Dpt. P. Welfare, Health & Welfare Bldg., Harrisburg, Phase 2, hospital bldgs., etc., at White Haven State School and Hospital. $6,625,000. CD 2/17.

▲ Pa., Phila.—SCHOOLS—Bd. Educ., 21 and Parkway, elementary school in Strawberry Mansion Area, Over $1,000,000; plans by Sabatino & Fishman, 116 S. 19 St., school, Welsh Rd. and Mower St., Over $1,000,000; plans by George W. Neff, 1520 Locust St., McMichael Elementary School addn., 35 St. and Fairmont Ave., Over $400,000.

▲ R. I., Lincoln—SCHOOL—School Bd., Lincoln Senior High School. $1,070,000. Jenks & Ballou, 2600 Industrial Trust Bldg., Providence, archts. CD 6/20/51.

▲ Tex., Gatesville—SCHOOL—Texas State School for Boys, Texas Youth Council, Bd. for Texas State Hospitals and Special Schools, University Admin. Bldg., Austin, seven 1 story Security School bldgs. $1,998,000. George L. Dahl, 2101 N. St. Paul St., Dallas, consult. engrs. CD 11/30.

▲ Tex., Richardson—SCHOOLS—Richardson Independent School Dist., Richardson, plans by Fred Buford & Assocs., archts.-consult. engrs., 500 Interurban Bldg., Dallas, Junior High School addn. $750,000; Senior High School addn., $600,000; elementary school, $550,000; elementary school, $500,000. CD 6/3/59.

Tex., Webster—SCHOOL ADDNS.—Clear Creek Independent School Dist., Webster, plans by Lightfoot-Burleson & Assocs., 3100 Audley St., Houston, Junior High School addn. $475,000.

▲ Wash., Marysville—SCHOOL—School Dist. 25 plans by G. W. Bentley, 1130 State St., Bellingham, Junior High School. $1,200,000. Bids this summer.

▲ Wis., Madison — ADMIN-RESEARCH HOSPITAL — State Dpt. P. Welfare, plans by Ames, Torkelson & Nugent, 2020 University Ave., admin.-research hospital, Central Wisconsin Colony and Training School, $1,800,000. CD 1/6/59.

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- **Eliminates form damage during stripping. Forms can't stick. Won't soften wood, prevents deflection.**
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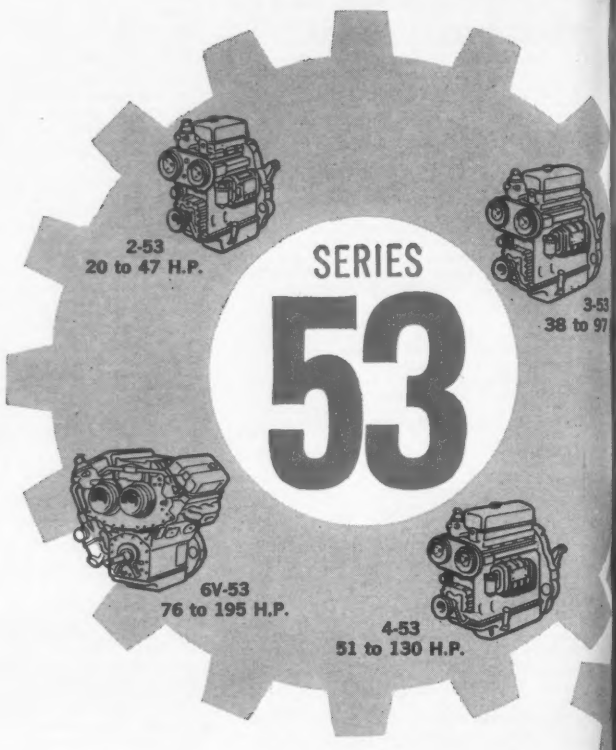

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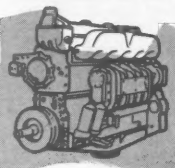
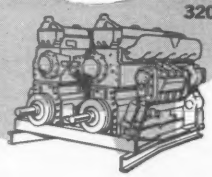
3-53
38 to 97

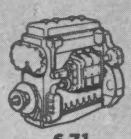


6-110
160 to 335 H.P.

SERIES
110

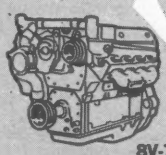
Twin 6-110
320 to 670 H.P.



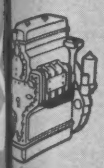


6-71
112 to 252 H.P.

6V-71
112 to 252 H.P.

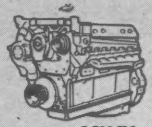


8V-71
150 to 336 H.P.



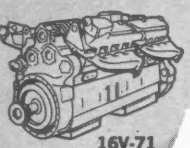
4-71
167 H.P.

SERIES
71

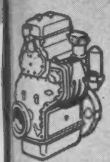


12V-71
224 to 504 H.P.

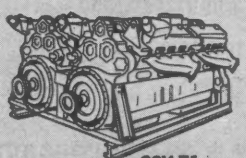
3-71
118 H.P.



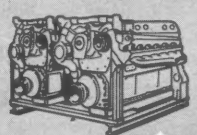
16V-71
300 to 675 H.P.



2-71
to 67 H.P.



32V-71
600 to 1350 H.P.
(Turbocharged—1650 H.P.)



24V-71
448 to 1008 H.P.

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COMMERCIAL BUILDINGS

▲ **Calif., Carmel**—HOSPITAL—Peninsula Community Hospital, c/o Edward D. Stone, archt., 350 Waverly St., Palo Alto, Calif., 2 story, rein.-con. hospital. $1,850,000.

▲ **Calif., La Jolla**—HOSPITAL—Scripps Memorial Hospital, 464 Prospect St., plans by Chas. Luckman & Assoc., 9220 Sunset Blvd., Los Angeles, Calif., 7 story, 135,000 sq. ft. concrete block hospital, Torrey Pines Mesa. Approx. $2,000,000.

▲ **Calif., Sherman Oaks (Sta. Van Nuys)**—DEPARTMENT STORE—Bullock's Inc., 7th & Hill Sts., Los Angeles, Calif., plans by Welton Becket & Assoc., 5657 Wilshire Blvd., Los Angeles, Calif., 300,000 sq. ft. department store and shops, Riverside Dr. between Woodman and Hazeltine Sts. $4,000,000.

▲ **Calif., Vacaville**—SHOPPING CENTER—E. B. Standish, 4545 Latimer St., San Jose, Calif., plans by Albert W. Kahl, 1120 Seventh Ave., San Mateo, Calif., 140,000 sq. ft. shopping center, 1,000 car parking lot, near Hy. 40 and Merchant St. $2,000,000.

▲ **D. C., Wash.**—HOSPITAL—George Washington University Hospital, 901 23rd St. NW, plans by Faulkner, Kingsbury & Stenhouse, 1710 H St. NW, 100 bed hospital wing addn. $3,000,000.

▲ **D. C., Wash.**—APARTMENTS—Webb & Knapp National Corp., 1012 14th St. N.W., plans by I. M. Pei & Assocs., 385 Madison Ave., New York, N. Y., two apartments, (6M and 6S) between 4th and 6th Sts., K and M Sts., west of Town Center. $3,000,000.

▲ **Hawaii, Maili Beach**—TOURIST HOTEL—Clark Reynolds, 260 Lewers St., Honolulu, Hawaii tourist hotel, incl. swimming pool, etc. $2,000,000.

▲ **Ill., Peoria**—HOUSING—Town & Country R. L. Est. Co., 3911 N. Sheridan Rd., and P & W Builders, Inc., 635 Knoll Crest Dr., housing development incl. water, gas lines, black top paving, curbs, gutters, 3 mi. west of Bradley Park, $2,500,000.

▲ **Mass., Dartmouth**—SHOPPING CENTER—Owner, c/o James E. Brewer, 10 Hathaway Rd., North Dartmouth, shopping center, State Hy., West of Smith Mills. Approx. $1,500,000. Constr. 1960.

▲ **N. J., Holmdel**—HOUSES—George Wicks, Willowbrook Rd., plans by Wm. Chirgotis, 80 Morris Ave., Springfield, and Herman York, 90-04 161 St., Jamaica 32, N. Y., 125 houses off Rte. 520, $3,500,000.

▲ **N. J., Levittown**—HOSPITAL—Levittown General Hospital, 1325 Walnut St., Phila., Pa., plans by Leonard Evantash, 225 S. 15 St., Phila., Pa., 1 story, 45,000 sq. ft., 100-bed with expansion to 200-bed hospital, $2,000,000. Seymour W. Greenberg, 1619 W. Thompson, Phila., Pa., consult. engr. CD 5/10.

▲ **N. J., Princeton**—FIELD HOUSE—Princeton University, plans by McKim, Mead & White, 101 Park Ave., New York, N. Y., field house, $1,000,000. CD 3/27/57.

▲ **N. Y., New York**—APARTMENT—Junel Homes, Inc., 1200 Union Turnpike, New Hyde Park, plans by Philip Birnbaum, 12 E. 48th St., New York 17, N. Y., apartment, 500 E. 77th St. $1,500,000.

▲ **O., Chagrin Falls**—NURSING HOME—Hamlet Development, 40 Locust Lane, plans by Robert A. Little and George F. Dalton & Assocs., 1303 Prospect Ave., Cleveland, Zone 15, nursing home; 8 to 10 story apartments for retired couples, Mill Pond, $4,000,000-$5,000,000. Constr. this summer.

▲ **O., Englewood**—HOMES—C. W. Sharp & Sons, Inc., 205 Brownstone Dr., Dayton, 250 addnl. homes, Englewood Park, $3,750,000.

▲ **O., North Olmsted**—HOMES—W. B. Pate Constr. Co., 5194 W. Park Dr., 140 homes, Tudor, Deving, Bershire and Hampton Dr., $3,000,000.

▲ **Pa., Blue Bell**—COUNTRY CLUB, etc.—Cedarbrook Country Club, Cheltenham Ave., Phila., plans by Carroll Grisdale & Van Alen, 6 Penn Center Plaza, Phila., country club, golf course, swimming pool. $1,500,000. Bids in Spring 1961. CD 1/27.

▲ **R. I., Providence**—ENGINEERING and PHYSICS RESEARCH, etc.—Brown University, Prospect St., plans by Sherwood, Mills & Smith, 65 Broad St., Stamford, Conn., engineering and physics research and instruction bldg. $5,000,000. Syska-Hennessey, Inc., 144 E. 39th St., New York, N. Y., mechanical engr.

▲ **Tex., Dallas**—OFFICE, STORAGE—Southwestern Bell Telephone Co., 308 S. Akard St., plans by Thomas, Jameson & Merrill, 820 S. Harwood St., 21 story office and equipment storage, $2,250,000; 8 story office addn. on top existing 13 story office, $1,000,000, on S. Akard St. CD 10/22.

▲ **Tex., San Antonio**—DWELLINGS—E. J. Burke & Sons, 1100 Goliad Rd., 36 dwellings, $448,050; 33 dwellings, $434,700; 30 dwellings, $409,975; 39 dwellings, $461,075. Reynolds Andricks, 325 Majestic Bldg., consult. engr.

▲ **Wis., Whitewater**—HOME FOR AGING—Wisconsin Congregation Conference, 2719 Marshall Court, plans by Waterman, Fuge & Assocs., P. O. Box 87, Fort Atkinson, home for aging, $1,000,000. Bids in Fall. CD 11/2.

▲ **Que., St. John's**—HOSPITAL—La Corp. de l'Hopital du Haut-Richelieu, 427 Laurier St., plans by Rene and Gerard Charbonneau, 6260 Cote des Neiges Rd., Montreal, and Morin & Tougas, 217 Jacques Cartier St., St. John's, 300 bed hospital. $5,000,000.

INDUSTRIAL BUILDINGS

▲ **Ill., Peoria**—FOOD DISTRIBUTION CENTER—Super Valu Stores, Inc., 1001 Jefferson Ave. S., Hopkins, Minn. plans by Magney, Setter, Leach, Lindstrom & Erickson, Foshay Tower, Minneapolis, Minn., 150,000 sq. ft. wholesale food distribution center, $1,000,000. CD 5/20.

Ill., Quincy—PLANT—Electric Wheel Co., subsidiary Firestone Tire & Rubber Co., 1120 N. 28th St., plant addn. $110,000.

▲ **Mass., Newton**—ELECTRONIC DATA PROCESSING SCIENCE CENTER—Sylvania Electric Products, Inc., 100 1st Ave., Waltham, electronic data processing science center, Shaw Estates, Nahaton St. $3,400,000. Constr. 1960.

▲ **Minn., Fridley**—FACTORY, etc.—Maico Electronics, Inc., 21 N. Third St., Minneapolis, Minn., plans by Thorshov & Cerny, Inc., archts.-engrs., 404 Metropolitan Bldg., Minneapolis, Minn., 150,000-200,000 sq. ft. factory and office, N.E. Main St. and 40th Ave. $1,500,000. CD 5/5.

▲ **N. J., Point Pleasant**—PLANT—Borden Co., 350 Madison Ave., New York, N. Y., plant, Gull Island. $1,000,000.

▲ **O., Warrensville Heights** — WAREHOUSE — Heinen's, Inc., 17021 Chagrin Blvd., Cleveland, Zone 20, plans by Syl G. Schmidt & Assocs., Railway Exchange Bldg., St. Louis, Mo., 100,000 sq. ft. warehouse, Aurora and Warrensville Center Rds. $1,000,000.

▲ **Okla., Enid**—PLANT—Great Lakes Carbon Corp., Enid, petroleum coke plant, $4,000,000.

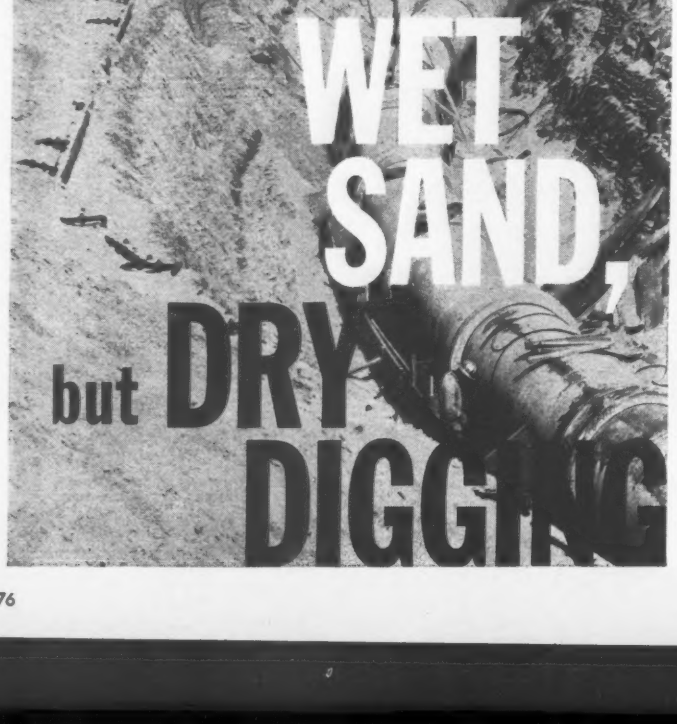
▲ **Pa., Monroeville**—RESEARCH TECHNICAL CENTER—Pittsburgh Corning Corp., Lewis Tower Bldg., Pittsburgh, 30,000 sq. ft. research technical center, Plum Boro. $1,000,000. Constr. in 1961.

▲ **Tex., Beaumont**—REFINERY—Mobil Oil Co., 150 E. 42nd St., New York, N. Y., delayed coking refinery, $4,750,000; refinery site area earthwork, $60,000; area and auto center pavement, $105,000.

UNCLASSIFIED

▲ **Alaska, Anchorage** — PIPE LINE — Anchorage Gas Corp., 96 mi. pipe line from Kenai Peninsula to Anchorage. $15,000,000. Delta Engineering Corp., Anchorage, engrs. Work to begin this summer. CD 10/16.

▲ **Louisiana**—OFF-SHORE GAS GATHERING LINES—Tennessee Gas Transmission Co., Tennessee Bldg., Houston, Tex., 11 mi. 12¾ in. off-shore gas gathering lines near Cameron. $1,031,000.



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Construction Scoreboard

This Week . . .

AMOUNT OF CONTRACTS LET

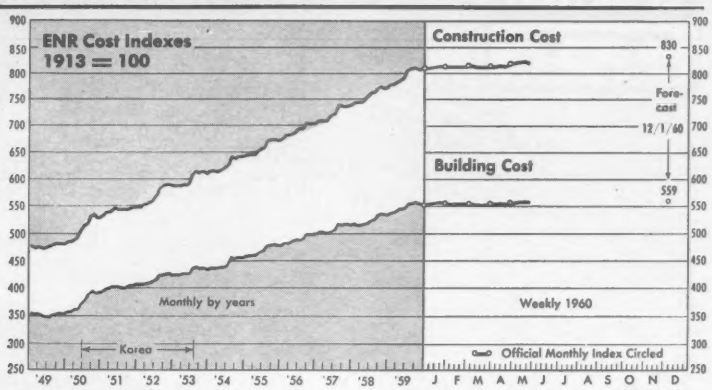
Contracts Awarded In 50 States By Type	†This Week	Cum. 22 wks 1960	Chge '59-'60 %
	millions		
All Heavy Construction	$648.0	$9,125.3	+ 7
By Ownership			
PRIVATE	481.6	5,010.8	+21
PUBLIC	166.4	4,114.5	− 6
State & Municipal*	131.3	3,168.8	+ 4
Federal	35.1	945.7	−29
By Type of Work			
PUBLIC			
Waterworks	5.8	188.2	− 1
Sewerage	15.8	229.1	−12
Bridges*	6.3	359.6	+48
Highways	58.0	1,311.2	+ 4
Earthworks, Dams & Waterways	28.6	316.9	−10
Buildings:			
Excl. Housing	34.8	965.5	−17
Housing	2.7	206.6	−30
Unclassified	14.4	538.7	−15
PRIVATE			
Buildings:			
Mass Housing	387.3	2,644.7	+42
Commercial	51.7	909.8	− 4
Industrial	30.3	1,053.6	− 9
Unclassified	12.3	401.4	+148

*Includes Private bridges (not in public total) †4 day week

NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of May 26	Cum. 21 wks 1960	Chge '59-'60 %
	millions		
Corporate Securities	$ 31.1	$1,101.2	−25
State and Municipal:			
All Except Housing	55.8	2,690.5	− 3
Housing	....	13.6	−56
Federal Loans	0.1	66.4	+11
Federal Aid	....	2,717.8	....
Total Nonfederal	$ 87.0	$6,589.5	+52
Federal Appropriations:			
Projects in U. S.	....	168.1	....
Outside U. S.	....	6.8	....
Total New Capital	$ 87.0	$6,764.4	+56



ENR INDEXES (1913=100), 20-cities' average	Week of May 26 1960	% Change from Apr. 28 1960	% Change from May 28 1959
Construction Cost	822.25	+0.25	+3.41
Building Cost	558.36	+0.13	+1.83

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

Latest Month . . .

STATE AND MUNICIPAL BOND SALES

	1960 May	1960 5-Mos.	Percent Change from 1959 May	Percent Change from 1959 5-Mos.*
	(millions)			
All Construction	$496.9	$2,702.5	+ 25.5	− 1.9
Buildings	265.1	1,378.4	+ 48.7	+27.7
Schools	179.3	999.2	+ 21.2	+43.1
Housing	.....	12.0	.....	−58.8
Other buildings	85.8	367.2	+182.8	+ 4.3
Heavy Construction	231.8	1,324.1	+ 6.6	−21.0
Waterworks	39.7	158.2	− 39.1	−40.1
Sewerage	35.4	176.0	− 30.1	−13.0
Bridges	2.0	109.4	+ 44.1	+960.2
Highways	29.9	192.0	+ 36.3	−21.5
Earthwork, dams, waterways	32.9	171.3	+1,315.5	−63.2
Electric and gas utilities	36.5	132.2	+952.7	+205.5
Airports	4.3	57.6	− 76.6	−63.9
Parking facilities	0.5	15.5	− 68.7	+65.1
Unclassified	50.6	311.9	+ 88.3	+12.4

* Based on average week: 21 weeks in first five months of 1960 and 22 weeks in first five months of 1959.

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturers Prices, 1947–49=100—BLS	Apr. 1960	Percent Change from last Month	Percent Change from last Year
All Types	174.7	+0.2	+1.5
Cranes, Draglines, Shovels	172.5	+0.2	+1.9
Shovel, ¾ cu yd	175.7	+0.5	+1.8
Shovel, 1–1½ cu yd	188.6	+0.8	+2.1
Shovel, 2–2½ cu yd	166.4	0	+2.6
Crane, truck mounted	168.2	0	−0.9
Scrapers and Graders	166.2	+0.2	+0.3
Scraper, 4 Wheel, 12–15 cu yd	156.8	0	0
Grader, heavy duty	173.1	0	0
Tractors (non-farm; incl. industrial)	191.2	+0.2	+1.8
Wheel-type, off-highway (January 1955=100)	129.2	+0.1	+0.7
Crawler type, 100–154 dhp	194.2	+0.9	+1.5
Machinery, Tractor Mounted	169.2	+0.1	+0.3
Dozer, hydraulic control	186.6	0	0
Loader, shovel type	162.5	0	+0.6
Specialized Machinery	157.8	0	+2.1
Ditcher	150.2	0	−4.1
Roller, tandem	226.4	0	+9.8
Roller, 3 wheels	178.7	0	+4.9
Portable Air Compressors	167.5	0	0
Contractors Air Tools	181.6	0	0
Mixers, Pavers, Spreaders	159.7	+0.2	+2.5
Mixer, truck, 6 cu yd	159.6	0	+2.5
Mixer, paving, 34 cu ft	196.7	+1.6	+2.6
Bituminous paver	163.2	0	+0.3

$300,000 contract for the stadium's seat foundations was awarded to Stress-Con Division of Shute Concrete Products, Inc., Richmond, Indiana. Architects—Eggers & Higgins, NYC. Structural Consulting Engineers—Severud—Elstad—Krueger—Associates, NYC. Consultant on Prestressing—Philip Ostendorf, Dayton. O. General Contractors—Hubert, Hunt and Nichols.

Prestressed Concrete Cuts Indiana Stadium Maintenance

Nearly 14 miles of prestressed concrete channels have been used for 70,000 seats in Indiana University's new stadium at Bloomington to be completed this Fall. These channels average 23 feet long. Leschen Prestress Strand was used in their fabrication.

A most versatile building material, prestressed concrete is receiving ever-increasing acceptance. Its unique properties such as thinner sections, longer spans, lower depth-to-span, minimum maintenance, less weight and economy appeal to architects and engineers striving for design freedom. In this stadium, economy through mass production in the prestressing plant was a key element in the decision.

TALK WITH A NEARBY PRODUCER OF PRESTRESSED CONCRETE—He can discuss technical problems, point to examples of prestressed construction in your area, and advise on costs and delivery of beams from his yard.

OR WRITE LESCHEN—Leschen supplies producers with the tensioning material—prestress strand. To insure uniform production of highest quality tensioning steel, Leschen has installed the world's newest and most modern wire mill and other specialized equipment. Write for literature giving typical uses and engineering data. Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.

LESCHEN WIRE ROPE DIVISION PORTER **H. K. PORTER COMPANY, INC.**

PORTER SERVES INDUSTRY with steel, rubber and friction products, asbestos textiles, high voltage electrical equipment, electrical wire and cable, wiring systems, motors, fans, blowers, specialty alloys, paints, refractories, tools, forgings and pipe fittings, roll formings and stampings, wire rope and strand.

Housing Market Seen Good Through 1980

- **Demand will come from rise in new households caused by post-World War II increase in birth rate.**
- **Delayed purchasing of homes will create an increase in demand for rental housing.**

Prospects for the housing market look good for the next 20 years, according to a recent Department of Commerce survey of current business, but only on an "iffy" basis.

The two big ifs are:

- If economic growth is generally well sustained.
- If war or depression doesn't torpedo the present high birth rate.

The main reason the housing market should be good is that there'll be more people to house. The national birth rate climbed sharply since the end of World War II. Although there has been a minute decline in the past two years, the rate is still 50% higher than it was in 1940.

The effect of these higher birth rates will hit the housing market when these children become old enough to marry and set up households. More than four out of five women marry before they reach the age of 25. In the past 10 years the net number of new marriages has been about the same as the number of women entering the 20-24 age class. The number of this group will rise 50% by 1970 and 100% by 1980.

There have been fewer than 500,000 households added annually since 1950. By 1980 the annual increase will be 800,000 to 1 million.

The Commerce Department survey predicts a need for 1¼ million housing units annually in the 1960s and a jump to 1½ million in the 1970s.

The department's report also sees an increase in future demand for rental housing units. Its statistics show that less than half of the heads of families in the 25-34 age bracket, 42% of them, own their homes. For heads of households in the 18-24 group, it's only 16%. It isn't until the 35-44 bracket that ownership reaches 63%, almost the peak. Increase is only slight after 44 years of age. Delayed home-owning means a need for rentable quarters, a need that will rise as the number of young household heads increases.

The demand for rental housing may be tempered by more relaxed financing. But the department's survey suggests that financing terms have got about as liberal as they're going to get, that the stimulus provided by easier financing to home-owning will decrease.

For all the gripes about the impossibility of getting ahead and the ravages of inflation, Commerce figures suggest that it's possible for the consumer to nose ahead.

Since 1946 it has been the rule that the value of the average FHA-insured, single-family house has been almost exactly twice the average income of its buyer. In 1946 the FHA estimated median value of the property was $6,558 and the mortgagors annual median effective income was $3,313. In 1959 the property value was $14,329 and the income was $6,912.

Despite this neck-and-neck race between prices and incomes, the consumer has won a substantial increase in the amount of house he gets for his dollar. The median house in 1946 had an area of about 900 sq ft. Now the median house has an area of about 1,100 sq ft. Other indications of quality improvements are the larger proportions of houses with basements, garages and more than one bathroom.

Department of Commerce figures fit in with the classic concept of housing expenditure, that the greater a man's income, the less he spends proportionately on housing. The department's statistics show that at the bottom of the scale, the average man in the $4,000-a-year-bracket spends two and one-half years worth of income on his average home. At the other end, the average $12,000-a-year man spends a year and one-half's salary for his.

The price paid for a house, says the department, has little to do with the size of the family occupying it. The price is almost entirely dependent on income.

Business in Brief . . .

• **Big job in Juneau**—Initial phase of a $45-million private housing project at Juneau, Alaska, will start this summer. Construction of first 200 houses of a planned total of 2,000 will start July 1. A shopping center and a $6-million hotel resort are also planned for a 1961 start. Developers are Stone and Schulte, Inc., San Jose, Calif.

• **Good customer**—The Corps of Engineers, Alaska District, will spend $95 million for construction this year, according to William C. Gribble, Jr., district engineer. The total is about $15 million above the annual average of recent years. The money will go to projects at 96 different sites in the state.

• **Higher fees recommended**—Baltimore's public works director has recommended increases of about 20% in the fees paid for architectural design of city construction projects. There would be two fee schedules to replace the present single schedule —one for schools and a higher rate for all other projects.

• **Santa Clara renews**—The redevelopment agency of Santa Clara, Calif., filed plans and appraisals for its first urban renewal project, a $5.5-million program that will involve 29 acres in the city's old business district. New commercial enterprises will go up on 16 acres and the rest will be devoted to patios and walkways. No residential development will be included.

• **Housing plans**—A $12-million housing development will be constructed at Cheektowaga, near Buffalo, N. Y. Plans call for construction of 660 houses. Builders are Peter Santin Construction Co., Inc. and Kidd-Kott Construction Co., Inc.

• **Charlotte's road plans**—A $63.5-million street construction program for Charlotte, N. C., has been recommended by Wilbur S. Smith & Associates, Columbia, S. C., consulting engineers. The program would include three expressways through the city, and would take 20 years to complete.

N. Y. Has Bad Day at the Track

Several contractors and subcontractors were accused last week of defrauding New York State of $11 million in the construction of what was to be a $7-million clubhouse at Yonkers Raceway, just north of New York City.

Under a law in effect from 1956 to 1959, the state is committed to reimburse harness racing tracks for capital improvements. The money to pay for these construction costs is to come from the state's tax income from parimutuel betting.

The State Investigation Commission promises to show that this 200% markup was the result of "the techniques employed in the granting of contracts to favored firms and the loose procedures and supervision which permitted these overcharges to be made for alleged work performed by so-called change orders."

The basic contract for the 1956-1958 reconstruction and improvement work was a cost-plus contract.

In hearings so far the state has charged that:

- Subcontractors made a profit of $80,000 on a $193,573 plastering and lathing job.
- New York State was billed $300,000 for $145,000 worth of steel.
- There was no record for some of the work for which the state had been charged.
- Duplicate bills were submitted for rental of heavy construction equipment that was supposed to be at two different jobs at the same time. The machinery was owned by Edward J. Petrillo, Inc., of Yonkers. The general contractor for the raceway clubhouse is Yonkers Contracting Co., Inc., headed by Edward J. Petrillo, who rented equipment to himself at a fee of $375,000, says a commission lawyer.

Yonkers Raceway has announced that it won't seek payment from the state for excessive fees charged by contractors.

Bridge-Tunnel Bond Issue Set

An improved bond market has breathed life into the proposed $144-million bridge-tunnel crossing of the Chesapeake Bay between Norfolk and the Eastern Shore.

A $210-million bond issue that would have financed the project was withdrawn from the market last autumn when commercial banks lifted their prime interest rate from 4½% to 5% (ENR Sept. 10, 1959, p. 19).

A $200-million issue will be floated in June if conditions for the sale remain favorable, says Lucius J. Kellam, chairman of the Chesapeake Bay Bridge-Tunnel Commission.

The $200-million figure is the result of a restudy of cost factors. Although the 16.5-mile bridge-tunnel connection will cost only $144 million, the additional $56 million will be needed to liquidate $20 million worth of bonds on a ferry fleet it will replace and to pay interest on its own bonds until the commission begins to get revenue from toll collection.

The commission and the contractors last year agreed to extend the contract under which the bridge-tunnel was to have been built.

Construction of the Chesapeake Bay tube will raise to four the number of vehicular tunnels in the Norfolk area. Two are in use and a third, another Portsmouth-Norfolk tube, is under construction.

Old Parkways Get New Manager

New York State will take over and rehabilitate Westchester County's historic parkway system (ENR July 9, 1959, p. 24).

A new agency, the East Hudson Parkway Authority, has been created to operate the parkways and is empowered to raise as much as $50 million through bond issues to improve them.

The Hutchinson River Parkway, the Saw Mill River Parkway and the Cross County Parkway were built by the county and New York City in the '20s and '30s and were examples of revolutionary thinking in highway construction.

But now, they are antiquated and Westchester County can't afford to pay for the extensive modernization they demand.

The county will retain control of the Bronx River Parkway, the first of the parkways. It offers no difficult financial problem.

The new authority will also operate the Sprain Brook State Parkway, now under construction, and the Taconic State Parkway.

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H. K. PORTER COMPANY, INC.

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Consistently excavate 30 Lineal feet of 10' 6" Dia. tunnel in 8 hours in Chicago sewers. Designed for clay, earth and shale.

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TUNNEL AND MINE EQUIPMENT
Lancaster, Penna.

ALWAYS USE POSTAL ZONE NUMBERS

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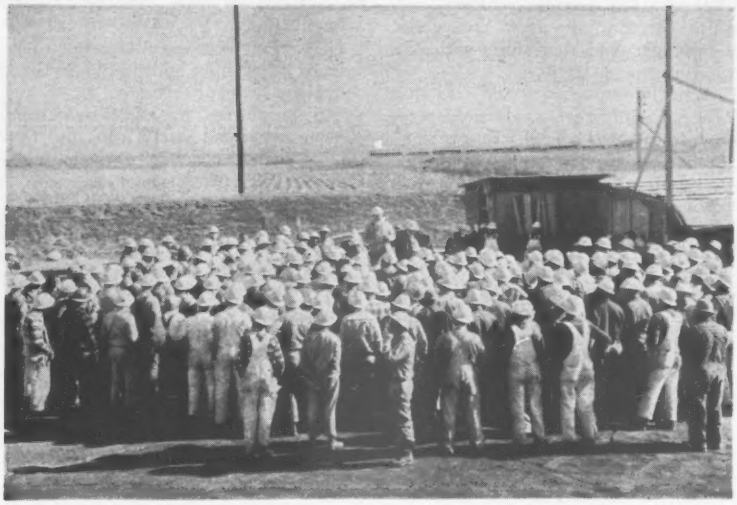
Safety Director L. H. Bornoff . . .



. . . concentrates on instilling safety consciousness as . . .

H.K. Ferguson Makes Safety Work

For the second year in a row the H. K. Ferguson Co. of Cleveland has won the highest safety award in the construction industry—the National Safety Council's Award of Honor.

This is significant proof that "construction can be safe despite the fact that normally it is a high hazard industry," says Robert L. Moore, general chairman of NSC's Construction Section.

H. K. Ferguson's frequency and severity rates, by which safety performance is judged, have shown a steady improvement. Last year they were way below the national average for construction.

How has Ferguson accomplished this? By convincing both labor and management that the law is wrong when it says an accident is "an unforeseen event that is not anyone's fault."

Accident prevention—like an accident itself—doesn't "just happen," say Ferguson men.

"Achieving an effective safety program is 50% getting the backing of top management. If you don't have that, you're licked before you start. Then, it's 40% the psychology of making every man on the job safety conscious. That is so because the only thing in the world that breaks up a safety record is a man. Finally, the mechanics of the program make up 10% of an effective safety effort."

Such is the formula of H. K. Ferguson's Louis H. Bornoff, one of the nation's top safety directors. And he's proven that the formula works.

The H. K. Ferguson enterprise provides a testing area for the formula on a grand scale. For Ferguson is a large engineering and building firm that specializes in construction for the process industries. It employs from 5,000 to 10,000 men, depending on the work load.

Jobs include the most hazardous to be found anywhere—steel mills, paper mills, oil refineries and atomic energy installations.

The company last year won not only the NSC Award of Honor, but also the Safety Award of the National Constructors Association; a Safety Award of the Atomic Energy Commission, Western Division, Idaho; the Award of Merit for the AEC installation at Oak Ridge, Tenn.; and the Special Safety Award from the Industrial Commission of the State of Ohio.

All the awards are for past performance. And the record continues to improve.

Last year, for example, the number of H. K. Ferguson's disabling work injuries per 1,000,000 employee-hours exposure (frequency rate) was 3.06. For purposes of comparison, the company's 1958 rate was 8.98, while the U. S. Department of Labor, National Safety Council, Associated General Contractors and National Contractors Association reported rates of 28.5, 19.72, 19.67 and 15.61, respectively.

Ferguson's rate of severity of disabling accidents has been similarly reduced—down to 138.0 last year compared to 288.99 for 1958. Corresponding 1958 rates for the U. S. Department of Labor, NSC, AGC and NCA were 4017.0, 2616.0, 2365.0 and 1917.62. (Figures represent the total days charged for work injuries per 1,000,000 employee-hours exposure). Days charged include actual calendar days of disability resulting from temporary disabilities, and scheduled charges for deaths, and permanent total and permanent partial disabilities due to accidents.

The company had only 17 disabling accidents in 1959, compared with 38 in 1958. Man-days lost were reduced to 768 in 1959—down from 1,080 in 1958. Figures include both domestic and foreign operations. And Ferguson has just completed four months—or 1,565,445 man-hours—of work without a disabling accident, for which it won an NSC No-Injury Award of Merit.

Such amazing safety records mean more than just awards to H. K. Ferguson. The company has realized monetary gains in refunds and credits over the past three years (1957-59) that run into a six-digit figure. Recently, the Industrial Commission of Ohio, for example, credited Ferguson with a 30% insurance merit rating despite a general increase in insurance rates covering manual workers.

(*Turn the page*)

When asked how he achieves such results, Mr. Bornoff says: "You've got to sell them, and that starts with top management."

"Actually, we have to sell everyone in the company that good safety practice is to his own benefit," he explains.

Some evidence of the importance Mr. Bornoff puts on the psychological side of a safety program appears in his book, "The Human Side of Safety vs. the Supervisor."

There, Mr. Bornoff says: "We, of the 'Safety Fraternity,' are fully aware of the fact that our success or failure in the prevention of accidents rides on the efforts of supervisors. No one else can do very much about it. . . . By intimate contact, the supervisor comes to know the characteristics of each of his men. He may gain knowledge of such outside factors as domestic relations, financial troubles, background and environment, which have a bearing on the employee's frame of mind. He learns by experience the best method of getting each employee to carry out his orders and suggestions so that accidents are kept to a minimum.

"Supervisors can easily be shown in dollars and cents and completed-on-time work schedules how safety can help them get their job done. The problem becomes one of showing the supervisor how to make this meaningful to his workers.

To do this, the supervisor must be taught to teach proper safety measures in terms of his workers' interests—not his own or the company's.

"Each man has a vulnerable spot in his makeup, which is an avenue of approach whereby he can be shown how safety helps him get or preserve what he considers worthwhile. . . . The worker wants to be identified with things that are worthwhile in his own mind—not yours."

Mr. Bornoff warns, however, that it takes time to develop a safety program in which all workers are oriented properly. Any program that moves too fast, or that points to glory for the company or its safety department, is apt to fizzle. The common objective may become the object of scorn, and morale may slump, opening the door to unsafe practices.

The mechanics of H. K. Ferguson's safety programs are well thought out but are not burdened with frills.

Depending on the number of men employed at a job and the hazards involved, there will be either a safety engineer, inspector or representative designated. Where a job employs 200 men or more, a full-time safety man is named. And jobs with more than 300 workers call for more than one safety man.

H. K. Ferguson has also established a set of safety rules and procedures. Included are such rules as:

"All employees are to be indoctrinated as to general safety rules and the standard safety codes applying to their jobs.

"All employees are to report and receive first-aid treatment for all injuries received, however minor they may be.

"All employees are to be instructed in the proper use of safety equipment, such as fire extinguishers, mouth-to-mouth inhalators and so on."

A regular inspection procedure is followed on every job "as often as possible." In addition, Mr. Bornoff makes personal, unannounced surveys of every H. K. Ferguson job in the country. Inpections cover every aspect of the safety program. A five to 15 minute period is set aside weekly on each job to give the workers further safety indoctrination.

As the H. K. Ferguson safety program gained momentum, Mr. Bornoff found that the men on the jobsite were calling in to him for assistance, asking such questions as these: "A man has been injured after working part of a day. Does he get paid for the whole day, or what?" "A man is claiming hernia compensation. Is he entitled to it?"

Without a good safety program and coordination of field and home office activity, these problems might be sloppily handled, with injustice to the injured and unnecessary costs to the company, Mr. Bornoff observes.

H. K. Ferguson has, in addition, a safety award program within the company, which is designed to promote safety consciousness.

Awards range from a ceritficate and a mechanical pencil for foremen and craftsmen who complete a year of employment without a lost time accident, or for an accident-free job, to the President's Award to project managers and their staff of supervisors on completion of two successive years' supervisory direction of multi-million man-hours projects without a serious or lost time injury. The President's Award is worth $500 in cash.

These features of H. K. Ferguson's program add some of the lubrication that makes it work smoothly.

But Mr. Bornoff still maintains that "The secret of the successful safety program is first, having the support of top management, and second, selling safety in a way that the craft worker will readily accept it as something in line with his own best interests."

OFFICIAL PROPOSALS

Bids: June 21, 1960

Cannonsville Dam
Contract 465

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 11:00 A.M., Eastern Daylight Saving Time (10:00 A.M., Eastern Standard Time), on Tuesday, June 21, 1960, for Contract 465, for the construction of the Cannonsville dam, waste weir, and weir, waste, and outlet channels, and the completion of construction of the release water works, together with the plugging of the diversion conduit, construction of a gaging weir, access road and final grading in the vicinity of the dam, installation of equipment and other appurtenant work, all as set forth in the specifications. The Cannonsville dam will be approximately 2,800 feet in length along the top, will have a maximum height of about 175 feet, and will be constructed of earth compacted by rolling. The work is located near the Village of Deposit, Delaware county, New York.

Pamphlets containing information for bidders, forms of bid and contract, specifications, contract drawings, requirements as to surety, etc., can be obtained in the Secretary's office, Room 1312, at the above address, upon application in person or by mail, by depositing the sum of $5.00 for each pamphlet. Within 30 days following the award of contract or rejection of bids the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet returned in acceptable condition. Arrangements will be made whereby prospective bidders desiring blueprints of the contract drawings for their own use may secure same, the cost thereof to be paid by them. For further particulars apply at the office of the Chief Engineer at the above address.

ARTHUR C. FORD, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners; Board of Water Supply; BETTY COHEN, Acting Secretary.

District of Columbia—Sewer and Watermain Construction—Dept. of Sanitary Engineering, May 24, 1960. CONSTRUCTION OF SLASH RUN RELIEF SEWERS, New Hamp. Ave. and Eye St., N.W., between Wash. Circle and 27th St. (Invitation No. C-60154-S), consisting of: Open Cut—Sewer Construction; 385 lin. ft. 10'x6' reinforced concrete box sewer; 100 lin. ft. 8'x8' box sewer and 36" dia. terra cotta sewer; 725 lin. ft. 96" dia. reinforced concrete pipe sewer; 795 lin. ft. 36" dia. terra cotta pipe sewer; 200 lin. ft. 15" dia. reinforced concrete pipe catch basin connections; 35 lin. ft. 18" dia. and 40 lin. ft. 15" dia. terra cotta pipe sewer; 4 reinforced concrete underground structures; 9 reinforced concrete manhole bases; and 45 lin. ft. 48" dia. reinforced concrete pipe sewer. Tunnel—Sewer Construction; 650 lin. ft. unified section, 8'x8' horseshoe sewer and 36" dia. terra cotta sewer. Watermain Construction; 545 lin. ft. 8" dia. and 605 lin. ft. 2" dia. watermain. (Wage rates have been predetermined by Labor Dept.) Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Rm. 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM, EDT, June 14, 1960, in Rm. 424, 499 Pa. Ave., N.W.

Bids: July 12, 1960

Notice for Proposal of
Natural Gas Franchise

Proposals for an exclusive natural gas franchise will be accepted in the office of the City Clerk of the City of Wilton Manors, Florida, 524 N. E. 21st Court, Wilton Manors, Fort Lauderdale, Florida, until 8:00 o'clock P. M. on Tuesday, July 12, 1960.

OFFICIAL PROPOSALS

Bids: June 23, 1960.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Canal Law and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 23rd day of June 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany, New York						
Albany (Rte. 9W)	R.C. 60-106	Ravena-Becker Corners, S.H. 8349 Bethlehem Center-Beckers Corns., S.H. 5643 Albany-Bethlehem Center, S.H. 5499	10.40	Asphalt Concrete	$20,000 Plans $5	$374,000
Essex, Greene, Rensselaer, Saratoga & Schenectady	FARDC 60-1	Permanent Radar Detector Traffic Counter Stations on S.H. 891, 8384, 610, 5314 & CR 30 Project No. SWHP-1(17)	....	Installing 5 Radar Detector Traffic Counter Stations	$400 Plans $5	6,900
Rensselaer (Rte. 20)	R.C. 60-88	Schodack Center-Nassau, S.H. 536; Nassau Village, S.H. 949; Nassau Vill., S.H. 5163; Nassau-Brainard, S.H. 285; Riders Mills-Brainard, S.H. 1521; East Nassau-Brainard, S.H. 439	7.29	Asphalt Conc.= 7.26 Mi. Misc. Work = 0.03 Mi.	$11,000 Plans $5	208,000
Saratoga (Rte. 50)	R.C. 60-94	Ballston-Ballston Lake, Pt. 2, S.H. 5085; Ballston-Ballston Lake, Pt. 1, S.H. 5062	5.09	Asphalt Concrete	$15,000 Plans $5	268,000
Saratoga (Rte. 9)	FARC 60-102	Malta-Saratoga, S.H. 611 Project No. F-U-639(18)	0.78	Asphalt Conc.= 0.71 Mi.; Misc. Work = 0.07 Mi. Comp. Pl. Gird. 113' Span Total	$28,000 Plans $5	512,000
Schenectady (Rte. 20, 406 & 158)	R.C. 60-86	Guilderland-Duanesburg, Pt. 2, S.H. 8097; Gifford Church-Gifford Corns., S.H. 1680; Schenectady-Guilderland, S.H. 577	11.50	Asphalt Conc.= 10.93 Mi. Misc. Work = 0.57 Mi.	$27,000 Plans $5	452,000
Washington (Rte. 22)	FARC 60-98 FASH 60-5	Granville-Troy Stage, S.H. 104 Granville Connections Project No. F-523(8)	3.55 (0.16 Acc.)	Asphalt Conc.= 3.47 Mi.; Asph. Conc. (Acc.) 0.16 Mi. Misc. Work = 0.08 Mi.; Prestressed Conc. Beam Bridge Span 47.3'	$59,000 Plans $5	1,058,000
Washington (Rte. 22A)	R.C. 60-87	Middle Granville-Hampton-Fair Haven, S.H. 1937	7.49	Asphalt Concrete	$15,000 Plans $5	267,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Herkermer, Montgomery & Oneida	FARDC 60-2	Permanent Radar Detector Traffic Counter Stations on S.H. 8012, 5028, 5346 and City of Utica Project No. SWHP-1(17)	....	Installing 4 Radar Detector Traffic Counter Stations	$300 Plans $5	5,300
DISTRICT No. 3, EARL E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Onondaga, Oswego & Wayne	FARDC 60-3	Permanent Radar Detector Traffic Counter Stations on S.H. 5016, 429, 1516 and in City of Oswego Project No. SWHP-1(17)	....	Installing 4 Radar Detector Traffic Counter Stations	$350 Plans $5	6,300
Wayne	FASS RC 60-9	East Penfield-Walworth, Pt. 2 (FASS 58-15), C.R. 138 Project No. S-322(3)	5.31	Asphalt Conc., Type 1A	$3,000 Plans $5	56,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Livingston (Rte. 63)	R.C. 60-95	Dansville-Geneseo, Pts. 1 & 2, S.H. 5723	4.54	Asphalt Concrete	$12,000 Plans $5	219,000
Livingston & Ontario	FASS 60-7	Naples-Hunts Hollow-Honeoye, Pt. 5, C.R. 36 Project No. S-475(1)	7.10	Bit. Double Surface Treat. Pavt.= 7.05 Mi. Misc. Work = 0.05 Mi.	$55,000 Plans $5	1,010,000
Monroe, Livingston (Rte. 383, & 36)	R.C. 60-101	Garbutts Crossing, S.H. 5097; Scottsville-Mumford, S.H. 5046; Leroy-Caledonia-Mumford, S.H. 5021	4.34	Asphalt Concrete	$23,000 Plans $5	416,000
Monroe (Rte. 31)	FARC 60-91	Holley-Brockport Pt. 2, S.H. 5425 Project No. F-1037(4)	2.34	Asphalt Concrete	$19,000 Plans $5	352,000
Ontario (Rte. 5 & 20)	FARC 60-97	Geneva-Canandaigua, Pt. 2, S.H. 207 Project F-338(10)	5.56	Asphalt Concrete	$20,000 Plans $5	354,000
Wyoming (Rte. 78)	R.C. 60-99	Java Center-Waldo Corns.-Smith Corners, S.H. 1716	4.07	Asphalt Conc.= 4.03 Mi. Misc. Work = 0.04 Mi.	$10,000 Plans $5	185,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie (Rte. 20)	FARC 60-90 FARC 60-92	Transit Road, Pt. 4, S.H. 9217 Project No. F-107(9) Hamburg-North Collins, S.H. 523	0.07 4.35	Asphalt Conc. Type 2B; Widen & Rehabilitate; Pl. Gird. Br. 3 Sp. 170.5' Total Asphalt Conc.= 4.21 Mi.	$5,000 Plans $5 $30,000	88,000 525,000
Erie (Rte. 18)		Proj. No. F-750(19)		Misc. Work = 0.14 Mi.	Plans $5	
Erie & Niagara (Rte. 270)	M 60-5	New Home Bridge (E-241); over Erie Canal near Village of Wendelville	....	Cleaning & Painting Bridge	$500 Proposal Only $2	9,400
DISTRICT No. 6, WILLIAM J. DENNIS, District Engineer, State Office Bldg. 30 West Main Street, Hornell, New York						
Steuben (Rte. 15)	FARC 60-100	Avoca-Wallace-Cohocton, S.H. 5564 Project No. F-627(13)	0.47	Asphalt Conc.= 0.46 Mi.; Misc. Work = 0.01 Mi. Prestress. Conc. Br. Span 74.5'	$12,000 Plans $5	206,000
DISTRICT No. 7, ROBERT W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Franklin (Rte. 30)	R.C. 60-104	Duane Center-Mountain Pond, S.H. 9007	5.40	Asphalt Conc. Type 1A	$75,000 Plans $5	1,319,000
Jefferson (Rte. 3)	FARC 60-85	Oswego County Line-Aspinwall Corners, Pt. 2, S.H. 8393 Project No. F-539(10)	4.88	Asphalt Conc. Type 1A	$8,500 Plans $5	153,000
Lewis (Rte. 12D)	R.C. 60-93	Oneida County Line-Turin, S.H. 5327	4.48	Asphalt Conc. Type 1A	$7,500 Plans $5	136,000
St. Lawrence (Rte. 37)	FARC 60-83	Morristown-Hammond, Pt. 2, S.H. 970 Morristown-Hammond, Pt. 2, S.H. 970A Project No. F-650(10)	4.98	Asphalt Conc. Type 1A	$60,000 Plans $5	1,082,000
St. Lawrence (Rte. 37)	FATC 60-3	City of Ogdensburg, Rte. 37 Arterial, S.H. (FAC 57-16); Ogdensburg: Rte. 37 Connections, S.H. (FASH 57-19) Project No. U-650(11)	2.08	Traffic Signals	$2,500 Plans $5	48,000
DISTRICT No. 8, KURT G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Columbia (Rte. 20)	R.C. 60-115	New Lebanon-Brainard, S.H. 615 Pittsfield-New Lebanon, S.H. 4	6.60	Asphalt Conc.= 2.49 Mi Misc. Work = 4.11	$14,000 Plans $5	259,000
Columbia, Dutchess, Orange, Ulster & Westchester	FARDC 60-4	Permanent Radar Detector Traffic Counter Stations on S.H. 762, 135, 537, 453, 8256, 8408, 53-15, 308, 231, 5372, 1456, City of Poughkeepsie & on Hutchinson River Pky. Project No. Swhp-1(17)	....	Installing 13 Radar Detector Traffic Counter Stations	$900 Plans $5	16,000
Orange	FASS 60-8	Forge Hill Road, C.R. 74 Project No. S-544(1)	0.36	Bit. Double Surface Treatment Comp. I-Beam Bridge, 3 Spans Total Length 256.2 ft.	$17,000 Plans $5	319,000
Putnam (Rte. 301)	FARC 60-66	McKeels Corners-Kent Cliffs, S.H. 9082 Project No. S-354(2)	2.21	Asphalt Concrete	$27,000 Plans $5	490,000
Ulster (Rte. 213)	FARC 60-89	Eddyville Bridge, S.H. 5192; Kingston-Rifton, S.H. 116 Project No. US-S-485(2)	1.45	Asphalt Concrete	$20,000 Plans $5	355,000
Westchester	TS 60-8	Sprain Brook Parkway (Cross County Parkway to Tuckahoe Road)	2.27	Traffic Signs	$2,500 Plans $5	42,000
DISTRICT No. 9, JOSEPH C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Int. Tr. Rte. 81)	FISH 60-4	Inter. Rte. 505, Penna. St. Line-Five Mile Point (Sunset Drive to Route 17) Project No. I-81-1(11)	0.46 (0.46 Acc.)	9" Cem. Conc. Pavt.= 0.72 Mi.; Asphalt Conc.= 0.18 Mi.; Misc. Work = 0.02 Mi. Incl. Pier Footings on HGS at Aetna Rd.	$32,000 Plans $5	573,000
Broome (Rte. 17)	R.C. 60-96	Windsor-Deposit, S.H. 5338 Deposit, S.H. 265	6.71	Asphalt Concrete	$16,000 Plans $5	293,000
Chenango (Rte. 26)	FARC 60-84	Cincinnatus-Taylor-Pitcher, Pt. 2, Pitcher-South Otselic, S.H. 8161; Otselic-South Otselic, Pt. 2, S.H. 663 Project No. F-424(4)	0.37	Top Course, Bit. Mac. Type 1 = 0.35 Mi. Misc. Work = 0.02 Mi. Double Box Br.-Skew Span 31± Ft.	$4,500 Plans $5	83,000
Sullivan	FARDC 60-5	Permanent Radar Detector Traffic Counter Station on County Rd. 53 Project No. SWHP-1(17)	....	Installing A Radar Detector Traffic Counter Station	$60 Plans $5	1,100
DISTRICT No. 10, AUSTIN M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Broux (Int. Tr. Rte. 278)	FIBE 60-1	Interstate Route Connection 516 & 517 Bruckner Expressway (Sect. 1-Contract 3) (LaFayette Ave.-Lowell St.) Project I-278-1(48)	0.85 (1.73 Acc.)	8½" Reinf. Conc. Slab Roadway (Main Line) = 0.78 Mi.; Colored Cem. Conc. Pavt.= 0.07 Mi. Asph. Conc. (Acc.) = 1.17 Mi. Cem. Conc. Pavt. (Acc.) = 0.56 Mi. Incl. Struct. Steel Via. 57 Span, Total 4,118' Welded Girder & W.F. Beam 4 Span 406.5'	$740,000 Plans $10	13,430,000
Nassau	BP 60-74	City of Long Beach (Roosevelt and Pacific Boulevards)	....	Beach Protection, 2 Stone Groins	$25,000 Plans $10	480,000

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specification, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: June 15, 1960

Narrows Bridge—Contract NB-4

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. Wednesday, June 15, 1960

For Narrows Bridge Contract No. NB-4, Furnishing and Delivering Metalwork for Cable Anchorages. The work includes cable anchor bars, structural framing and cable saddle castings. The bid must be accompanied by a deposit in the amount of $150,000.

Plans, specifications and contract documents may be purchased at the office of the Authority for $20.00, which will not be refunded.

Bids: June 15, 1960

Painting Exterior Steel Sash 15th Street Side

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
CONTRACT O & M-581

Sealed proposals for Painting Exterior Steel Sash, 15th Street Side, Port Authority Building, 111 Eighth Avenue, New York 11, N. Y., will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M., D.S.T. Wednesday, June 15, 1960, at which time and place said proposals will be opened and read.

Contract documents may be obtained upon request at the office of the Department of Purchase and Administrative Services, Room 900, 111 Eighth Avenue, New York 11, New York.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 2, 1960

Bids: June 28, 1960

Port Newark Street Improvements

THE PORT OF NEW YORK AUTHORITY
CONTRACT PN-590.001

Sealed proposals for paving, widening and repaving certain of the streets at Port Newark will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 28, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payments of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 2, 1960

Bids: June 21, 1960

Site Preparation For Runway For Memphis Municipal Airport

LEGAL NOTICE TO BIDDERS

Sealed proposals for the SITE PREPARATION FOR RUNWAY FOR MEMPHIS MUNICIPAL AIRPORT, MEMPHIS, TENNESSEE, will be received by the Board of Commissioners of the City of Memphis, Tennessee at the office of C. W. Crutchfield, City Comptroller, Room 204, Courthouse, until 2:30 P.M. on the 21st day of June 1960, and immediately thereafter will be opened and read publicly.

Copies of the drawings and specifications may be obtained by qualified bidders from the Office of Allen & Hoshall, Consulting Engineers, 65 McCall Avenue, Memphis, Tennessee, upon a deposit of $100.00, which deposit will be refunded fully after the submission of a bona fide bid and the complete return of the documents in good condition. Additional complete sets of the documents may be obtained by qualified bidders, and complete sets of the documents may be obtained by other properly interested parties upon a deposit of $60.00 made in the form of two separate equal amount checks, half of which total deposit will be refunded after the complete return of the documents in good condition.

Material Suppliers, Sub-Contractors, and other properly interested parties who do not require complete sets may obtain only those portions of the drawings and specifications in which they are interested, by requesting the desired drawings by specific drawing numbers, and the desired specification pages by specific page numbers. The charge for such portions of the drawings and specifications will be $2.00 per drawing sheet, and no charge for a reasonable number of specification pages.

A copy of the drawings and specifications may be examined at the office of the Engineer, or at the office of the Airport Manager, Memphis Municipal Airport, Memphis, Tennessee.

Each bid must be accompanied by a certified check or cashier's check on a solvent bank, or a bidder's bond executed by the bidder and a surety company licensed to do business in the State of Tennessee, in the sum of 5% of the amount of the bid. The bond is required as a guarantee that if the bid is accepted, a contract will be immediately entered into and the performance of it properly secured. The successful bidder will be required to execute Performance Bond in the amount of 100% of the contract price.

Proposal form must be properly filled out and must not be detached from specifications.

Bidders must have had previous experience in construction of this type.

Minimum wage rates as prescribed by the Secretary of Labor for the Memphis, Shelby County, Tennessee area shall apply.

All Bidders must be licensed contractors as required by Chapter 135 of Public Acts of 1945 of the General Assembly of the State of Tennessee, and all Amendments thereto. Bidder's name and license number must be placed on the envelope containing the bid.

WITHDRAWAL OF BID: Unless contrary to statutes of the State of Tennessee, including local charter provisions, no bidder may withdraw a bid submitted for a period of 30 days after the date set for the opening of such bid.

Award will be made on the lowest and best bid, if awarded.

The City reserves the right to reject any or all bids and to waive informalities in bids.

By Order of the Mayor and Board of Commissioners.

HENRY LOEB, MAYOR

ATTEST:
C. W. Crutchfield, City Comptroller

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5346) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, July 14, 1960, for furnishing two (2) 105,000 horsepower, vertical shaft, 225 rpm hydraulic turbines for Spring Creek Powerplant, Central Valley Project, California. Delivery is desired within 720 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado. Floyd E. Dominy, Commissioner.

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OFFICIAL PROPOSALS

Bids: June 21, 1960

The Port of New York Authority Toll Booth Air Conditioning Test Installation

GEORGE WASHINGTON BRIDGE
LOWER LEVEL EXPANSION
NEW JERSEY APPROACH
PALISADES INTERSTATE PARKWAY
TOLL PLAZA
CONTRACT GWB-802.316

Sealed proposals for the furnishing and installation of an air-conditioning system for Toll Booth No. 21 S at the connection from the Palisades Interstate Parkway to the George Washington Bridge in New Jersey will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, June 21, 1960, at which time said proposals will be opened and read in Room 1108.

Contract Documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115, and copies will be furnished upon request. No deposit will be required but the documents shall be returned in good condition not later than forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, June 2, 1960

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5349) will be received at Denver, Colorado, until 2 p.m., Mountain Standard Time, June 28, 1960, for furnishing motor-driven, horizontal, centrifugal type pumping units, each unit having the following capacity at 652 foot head: two (2) 25.3 cfs and two (2) 12.7 cfs; motor-driven vertical-shaft, turbine type pumping units each unit having the following capacity at 81 foot head: two (2) 25.3 cfs and two (2) 12.7 cfs for East Unit Booster and River Pumping Plants, Chief Joseph Dam Project, Washington. Delivery is desired within 330 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5351) will be received at Casper, Wyoming, until 10 a.m., Mountain Standard Time, July 7, 1960, for furnishing labor and materials for Cheyenne-Pine Bluff-Sidney 115-Kilovolt Transmission Line, Transmission Division, Missouri River Basin Project. Location Laramie County, Wyoming; and Kimball and Cheyenne Counties, Nebraska. Principal items are 495 structures—furnishing and constructing structures of various types and maximum pole lengths; 1,668 assemblies—furnishing, assemblying and attaching insulator assemblies with various numbers of insulators; 64.05 miles of line—furnishing and stringing three 477,000 circular mil ACSR conductors on wood poles; 180,000 pounds—furnishing and erecting steel towers; and other work. Completion time 420 days. For particulars, address Bureau of Reclamation, Building 46, Denver Federal Center, Denver 25, Colorado; P. O. Box 280, Casper, Wyoming; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

Department of Commerce, Bureau of Public Roads, May 19, 1960. SEALED BIDS will be received at the office of the Park Headquarters, Mammoth Cave National Park, Mammoth Cave, Kentucky, until 11:00 a.m., C.S.T., JUNE 21, 1960, for Project 1B2-5A1-7A1-9A1-10A1-18A1, Mammoth Cave National Park, Barren and Edmonson Counties, Kentucky. Grading, Draining, Crushed Aggregate Base, Bituminous Surface Treatment, and other work on various roads in the Park. The approximate quantities of the more important items are 160 acres Clearing and Grubbing, 737,500 cu. yd. Excavation, 95,000 Tons Crushed Aggregate Base, 850 cu. yd. Rubble Masonry and 8,425 lin. ft. Reinforced Concrete or Corrugated Metal Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications and bid forms are available upon request at the offices of the Bureau of Public Roads, Gatlinburg, Tennessee, or 1440 Columbia Pike, Arlington 4, Virginia. Plans and specifications may be examined at the Park Headquarters at Mammoth Cave. F. W. Cron, Regional Engineer.

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• POSITIONS VACANT

Estimator—Expanding Philadelphia Contractor has an opening for man thoroughly experienced in competitive public bidding. Top pay and working conditions. Wingate Construction Company, 34 So. 17th Street, Phila., 3, Penna.

Teaching and Research Assistantships are available to qualified students while working for M. S. or PH.D. degree in either solid or fluid mechanics. Write, Chairman, Dept. of Engineering Mechanics, University of Kansas, Lawrence, Kansas.

Detailer & Checker Structural Steel. We require an experienced man between the ages of 30 and 45 years for permanent position in our Drafting Room. Hospitalization and retirement benefits. Give references, age, and salary expected in application. Barber & Ross Company, 2323-4th Street, N. E., Washington 2, D. C.

Civil Engineer—Registered Professional Engineer capable of performing engineering and administrative duties required of City Engineer. Salary open. Send resume of educational and work experience background and salary requirements to City Manager's Office, City of Marysville, Michigan.

Construction Engineer, graduate. Heavy industrial construction in Chicago area. Work involves field engineering, production accounting, contracting, estimating and dealing with customers. P-4393, Engineering News-Record.

Permanent Position: Structural engineer with M.S. degree from well recognized engineering school. Well grounded in the Theory of Elasticity to handle complex indeterminate structures. Excellent living conditions, good future for young and responsible engineer. Submit Graduate School credits. Location North Carolina. P-4509, Engineering News-Record.

Engineer—Job Superintendent—Capable of handling a million dollar project. Central Illinois Contractor, profit sharing, good future. Give education, experience, salary expected, photo and references in reply. J. L. Wroan and Sons, Inc., Normal, Illinois.

Civil Engineer. Experience in soils laboratory helpful. Good opportunity for young man. P-4516, Engineering News-Record.

Soils Engineer—To supervise soils laboratory, foundation and subgrade investigations, exploratory drillings, compaction control and related operations for National organization, Pennsylvania location. P-4500, Engineering News-Record.

Sales Engineer, civil degree, willing to relocate, to estimate quantities, close sub-contracts with general contractors for major subcontractor—manufacturer. Position requires responsible man able to work on his own. Resume to include complete background and salary range, mail to P-4515, Engineering News-Record.

Sales Engineer—Estimator for structural steel and miscellaneous iron fabricator. Degree in architectural or civil engineering desirable. State experience, education, age, salary requirements and enclose snapshot with first letter to Southern Iron Works, Inc., P. O. Box 430, Alexandria, Va.

Engineer for Mechanical Department of progressive rapidly expanding construction firm in New Jersey. Must be able to assume full responsibility for this department from Beginning of project, bidding stages, negotiation, purchasing, field supervision and completion. All fringe benefits, including pension and profit sharing plans. Ideal working conditions. Send resume to P-4502, Engineering News-Record. All replies kept in strict confidence.

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• POSITIONS VACANT

Civil Engrs.—City of Redding, Calif. Associate—$570-692. B.S. plus 5 yrs. exp. req'd. Assistant—$517-$628. B.S. plus 3 yrs. exp. req'd. Two vacancies in 13-man staff engaged in all phases of municipal engineering including water and electrical system. $¾ Million in new projects annually. Pleasant living and working conditions. A sportsman's paradise. State Retirement System. 10% salary increase proposed 7-1-60. Send resume to R. H. Ward, City Engr., P. O. Box 271, Redding, Calif., before June 15, 1960.

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• POSITIONS WANTED

Controller — Office Manager, etc. salary 190.00 per week—consider overseas. PW-4434, Engineering News-Record.

Chief and Administrative Engineer, age 42, 10 years design and supervisory experience in consultant engineering. Graduate and registered professional engineer. PW-4415, Engineering News-Record.

Manufacturers Representative, 14 yrs. construction equipment experience. Will relocate. PW-4408, Engineering News-Record.

Field-office engr. layout, supervision, take off, etc. municipal, bldg. and heavy const. large or small firms, single. Location open. E. Brown, 600 N. 71st Ave., W. Hollywood, Fla.

Graduate Civil Engineer with five years of experience seeks position in Puerto Rico. Resume on request. PW-4357, Engineering News-Record.

Graduate Civil Engineer, 31, Married, 6 Years Construction Experience, U. S. Citizen, Fluent Spanish, Registered in Colombia, will consider U. S. or Foreign employment. PW-4460, Engineering News-Record.

Construction Manager, BSCE and 2 years M.E. Thoroughly capable, 20 years experience on various type projects. Best of references. Presently employed, desire change. Now have unclassified G. C. license in N. C., will work anywhere in U. S. PW-4464, Engineering News-Record.

Electrical Supt. or Chief Electrician age 59. 40 years experience, Construction Maintenance, Starting Salary $200.00 per week. Excellent References, Resume on Request. PW-4471, Engineering News-Record.

Construction Superintendent B.S.C.E. Exp. Mgr., Chf. Eng., Hvy. Const. Roads, Flood Control, Tunnels, Bldgs., Govt. Contracts, will Relocate, 3419 Utah, St. Louis, No., Eiswirth.

Structural Steel Fabrication Manager 10 years experience, estimating, selling, supervising. Production of 2 million per year. Business BSCE and 2 years M.E. Best of references. Excellent varied experience. Presently employed, desire change. Will relocate anywhere in U. S. PW-4463, Engineering News-Record.

Project Manager or Engineer. California Registered P.E. M.S. in Structural Engineering. Fellow-ASCE. 28 years experience in construction, design and administration of highways, bridges and storm drains. Administration of multimillion dollar complex interchanges for past ten years. Can handle projects from preliminary design to completed construction. Desires foreign work. PW-4483, Engineering News-Record.

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(Continued on the following page)

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An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

JUNE 16TH ISSUE CLOSES JUNE 6TH

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division or ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

SOUTH AMERICA
CIVIL ENGINEER

Subsidiary of major oil company operating in western Venezuela has opening for a qualified Civil Engineer.

MINIMUM REQUIREMENTS:

. . . Degree in civil or architectural engineering.
. . . Plus at least 3 years experience in general construction activities including overall design work with emphasis on reenforced concrete.
. . . Field inspection experience and knowledge of Spanish desirable.
. . . Age to 35 Years.

Liberal salary—Plus Allowances, bonus and other benefits.

Qualified candidates submit detailed experience summary and personal data to:

P-4441, Engineering News-Record,
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

BECHTEL

San Francisco

Bechtel's Refinery and Chemical division offers immediate employment opportunities for mechanical, chemical, or instrument engineers capable of assuming responsibility on design of major petrochemical, refinery or similar processing units.

Los Angeles
San Francisco

The Vernon and San Francisco Power and Industrial divisions of Bechtel Corporation require the services of qualified mechanical, electrical and civil/structural engineers. Qualifications must include recent experience in steam power plant or similar heavy industrial work.

Relocation allowances cover moving costs plus transportation reimbursement for you and members of your family. If you have an interest in a San Francisco or Los Angeles assignment, please send a resume of experience, including your present and required salary, to George I. Copeland, Manager of Personnel. Personal interviews will be arranged for qualified candidates.

Bechtel
Corporation
220 Montgomery Street
San Francisco, California

BUILDING COMMISSIONER

The City of Hamilton, Ohio, population of 73,000 is recruiting for a full time Building Commissioner. Requires Professional Engineer or Registered Architect; five years related experience in building construction and inspection. Must have supervisory ability. Age 28-55. Civil Service position; city offers excellent fringe benefits; $8000 to $9800, salary.

For details, write

Harold A. Hart, *Director of Civil Service*,
Municipal Building, Hamilton, Ohio

CIVIL ENGINEER

Experience In Take-Off
And Detailing of Structural
Steel Required

P-4443, Engineering News Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

MECHANICAL ENGINEERS

Openings for graduate engineers with a minimum of 5 years experience with consulting firm on piping, review of manufacturer's drawings, equipment layout. Powerplant experience desirable. Fringe benefits, part relocation costs. Send experience resume to Personnel Department.

HARZA ENGINEERING COMPANY
400 W. Madison Street Chicago 6, Illinois

BRIDGE and HIGHWAY ENGINEERS

Graduates with minimum 2 years of recent highway and bridge experience; for established consulting firm.

FRANK L. EHASZ, CONSULTING ENGINEERS
40-29 27th Street
Long Island City 1, N. Y. ST. 6-9505

• POSITIONS WANTED
(Continued from preceding page)

Construction Superintendent, 32, seeks position with midwest firm. Minimum $13,000. PW-4458, Engineering News-Record.

Graduate Civil Engineer with 13 years varied construction experience. Six years as chief estimator responsible for purchasing, expediting & contract negotiation. Desires position with general contractor offering opportunity for advancement. Prefer Mid. West. PW-4468, Engineering News-Record.

Estimator. Experienced in estimating and cost keeping. Highways and Drainage contracts. Evenings and weekends, Long Island. PW-4487, Engineering News-Record.

Chemist. Age 32. Has graduate work including strong engineering background. Considerable experience in soils, asphalts and concretes. Presently supervising a laboratory. Desires more opportunity. Resume on request. PW-4512, Engineering News-Record.

Registered Civil Engineer and Land Surveyor, 31, desires position with consulting engineer designing housing subdivisions or with contractor doing similar work. Prefer Florida or Mid-Atlantic States. PW-4514, Engineering News-Record.

Supt. or General Foreman—age 43—over 18 years experience highway construction supervising earthmoving equipment, excavating, drainage. Know men, methods and cost. Available at once. A-1 references. PW-4524, Engineering News-Record.

Construction Engineer desires field or office position—14 years varied experience. PW-4511, Engineering News-Record.

Steel and mechanical erector desires challenging position—excellent references. PW-4518, Engineering News-Record.

Civil Engr. 28, registered, desires position in Middle Atlantic States. Experienced in steel design, prestressed and reinforced concrete design. PW-4522, Engineering News-Record.

B.C.E.—25—4 yrs. exp. incl. prestressed conc. manufacture and varied struct. design. Desire position with managerial opportunity. Pres. loc. California. PW-4488, Engineering News-Record.

B.S.C.E. Reg. N.Y. Two years programming IBM 650. Seven years designing Sewers, Highways, and Drainage. PW-4499, Engineering News-Record.

Mechanical Estimator, Engineer, BME, 11 years exp. Heating, air conditioning, power piping, public, industrial work. Seeks responsible position with mech. contractor. PW-4507, Engineering News-Record.

Project Manager: Grad. Engr. P.E. Age 38. Experienced bid to completion in estimating, buying subs, layout, supervision, and payment, on industrial, hi-rise, hospital, treatment plant, and highway projects. Desire permanent relation in New Jersey. Available about August 1st. PW-4528, Engineering News-Record.

Construction superintendent considerable experience in industrial and commercial work. PW-4494, Engineering News-Record.

Construction Superintendent—Project Manager. Industrial & Commercial buildings. Will relocate. PW-4497, Engineering News-Record.

Electrical Engineer, BEE, Reg PE, 37, 14 years diversified experience in industrial power and control, power distribution, and petroleum-electric fields. Four completed foreign contracts. Speaks French, Spanish. Available foreign or domestic. PW-4506, Engineering News-Record.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.
EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• CONTRACT WORK WANTED

Structural, Mechanical, Electrical—15-man group of licensed engineers (4), designers and draftsmen for all types of structures, heating, air conditioning, steam, water and process piping, power wiring and lighting. Immediately available. CWW-4382, Engineering News-Record.

• BUSINESS OPPORTUNITY

Mature engineer, 20 yrs. exp., desires responsible associate to form consulting office in Texas Gulf Coast area covering Civil, Industrial, Sanitary fields. Would consider association with established firm. Please include experience and references with reply. BO-4480, Engineering News-Record.

• WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
Write today—now—without obligation.
WILSON *Engineering Corp.*
College House Offices HARVARD SQ. CAMBRIDGE, MASS.

CONSTRUCTION SUPERVISION
Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.
National Schools of Construction
Est. 1952
Satsuma, Florida

Foreign Contracts Notice to Bidders

We are seeking a

Joint Venture Contractor ASSOCIATE

for GOOD Money Making Foreign Projects

ROADS—BRIDGES—RAILROADS
MUNICIPAL—HARBOUR—DAMS
POWER—IRRIGATION—INDUSTRIAL

Must have late model equipment in good condition and AA-1 Dun & Bradstreet Rating, small Capital requirements. We have the GOOD contacts.

JACQUES J. YARED & COMPANY
P.O. Box 722 Station "B"
Montreal, Quebec

A LARGE AUCTION
LATE CONSTRUCTION EQUIPMENT
THURSDAY, JUNE 16, 9 AM, (EDT), MANCHESTER, NEW HAMPSHIRE

LOCATION: The yard of the Manchester Sand, Gravel & Cement Co., Inc. at Hooksett, N. H. 6 mi. North of Manchester, N. H. or 60 mi. North of Boston, Mass.

NOTICE: The Manchester Sand, Gravel & Cement Co., Inc. has quit the road, bridge and paving business. The equipment formerly used in the above operations is being sold by Mr. Parker H. Rice, Trustee. This is exceptionally well maintained equipment, all gone-through for the coming working season.

EACH PIECE POSITIVELY SELLS TO THE HIGHEST BIDDER Without Limit, Minimum or Reservation!

SHOVELS—GRADALLS—MOTOCRANE

2 Northwest 80D Shovels, S/Nos. 20613-19550B & 18595-17849B, both very good; Northwest Drag Boom for 80D; Lorain 80J Shovel, S/N 21513, good; Lorain Drag Boom for 80J; 2 Northwest 25 Shovels, S/Nos. 16186 & 11852, both good; Northwest Backhoe Front, for 25; 4 Gradalls, S/Nos. NP-38240, 40127, 32339 & 29693, all very good; Lorain 530W Moto-Crane, S/N 29172, very good; Northwest Drag Boom & Backhoe Front for model 6; Buckets.

TRACTORS—LOADERS

Cat D-9 S/N 19A-1621, with Ripper & 9U dozer, very good; Cat D-9, S/N 19A-1245, w/ 9S dozer, very good; Cat D-8 (series H), S/N 36A-961, with 8U dozer, very good; 3 Cat D-8's, all 14A's, all w/ 8U dozers, all very good; Cat D-8, 15A w/ Ripper & dozer, very good; 3 Cat D-7's, late 17A's w/ 7S dozers, all very good; Cat D-4, late 7U w/ dozer; 2 John Deere 440IC crawlers w/ dozers; Hough HM Payloader, S/N 92070, good; 3 IHC & Fordson Loader-Tractors; 2 AC & IHC Wheel Tractors.

CRUSHING EQUIPMENT

Telsmith Portable Primary Crusher Plant, S/N 598, w/ 25x36 Jaw, Chain Apron Feeder, GMC 6031C Diesel Power, all conveyors, very good; Telsmith Model 9C Portable Screening & Loading Plant, S/N 554, with 10x36 Jaw, 30x18 dbl Rolls, 4x10 Screen, GMC 6031C Diesel Power, all conveyors, very good; Telsmith Model 36S Gyrosphere Crushing & Screening Portable Plant, S/N 599, w/ 4x12 Screen, all conveyors, GMC 6240B Diesel Power & 50 KW Generator, elec. motors, all very good; 2 Telsmith 4x8 Screens.

GRADERS—MOTOR SCRAPERS
EUCLID END DUMPS

8 Euclid 87FD & 49FD End Dumps, S/Nos. 10157 to 15642, all good; 7 Cat DW-21 Motor Scrapers, S/Nos. 88E-2797 to 68C-1744, all in very good condition; Cat 70 Scraper, good; Cat 14 Grader, S/N 64C-137, all equip. very good; 2 Cat 12 Graders, S/Nos. 70D-2520 & 8T-20242, w/ Preco Blade Controls, both very good; Adams 660 & 610 Graders, both good.

ASPHALT EQUIP.—ROLLERS

3 Barber-Greene 879A Pavers, S/Nos. 236566, 23555 & 18253, all very good; Seaman DS47-43 Self-Propelled Pulvi-Mixer, good; 2 Etnyre Curb Machines; 3 Buffalo-Springfield 3-Axle Rollers, Models KX-25-E, KX-25-D & KX-25, good to very good; 2 Galion "Chief" Rollers, S/Nos. CRG-41171 & R-20555, very good & good; Galion TC8-12G & T6G Rollers; 3 Moto & Essick Rollers; Jackson MC-130A Multiple-Compactor; 2 Bros SP-54 Self-Propelled Rollers, very good; Bros 100 Ton Roll-O-Pactor; Pull Rollers.

COMPRESSORS—MISC.

Ingersoll-Rand 600 Compressor, very good; 2 I-R 105 Comps; 4 Lindsay 60 & 55 cfm Compressors; Many Pumps; Welders; Lite Plants; Heaters; Vibrators; Mixers; Drills; Air Tools; Saws; Pipe Equip; Engineering Equip; Many Other Items.

TRUCKS—TRAILERS

2 Alemite Grease Rigs, in Van Trucks; Sterling-White HB-2755D Diesel Tractor, very good; 3 Mack LFT & A50T Tractors; Rogers 60 Ton Lowboy, very good; Martin 32 Ton Lowboy, very good; Highway 30' Rack Trailer; 7 Fruehauf & Trailmobile Van Trailers; 5 3000 gal. Tank Trailers; 3 Office Trailers; 15 Dump, Tank, Flat & misc. Trucks; 20 Pickups; 5 Autos; Others.

Write—Wire—Call Auctioneers for full list.

TERMS: FINANCING AVAILABLE!!
Or complete payment sale day.

Former Property Of:
Manchester Sand, Gravel & Cement Co., Inc.
(Parker H. Rice, Trustee)
Manchester, N. H. Phone NA 4-4301

FORKE BROTHERS
the Auctioneers

321 Sharp Bldg. Lincoln, Nebraska HEmlock 2-1045

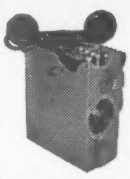
— EQUIPMENT AUCTION LEADERSHIP SINCE 1921 —

High Speed in 6x6's
NEW ISSUE TRUCKS
GMC! MACK! REO "Eager Beaver!"
• *Tandem Axle* • *Front Wheel Drive*
For specifications, prices, delivery, write
MEMPHIS EQUIPMENT COMPANY
P.O. Box 2852, Dept. E., Memphis, Tenn.
NATION'S LARGEST ARMY TRUCK DEALER!

FOR SALE

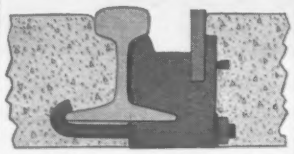
Equipment from a complete primary-secondary activated sludge-sewage treatment plant employing separate sludge digestion and vacuum filtration built-in dual units. Design capacity 4.5 MGD Good condition.

BERGEN COUNTY SEWER AUTHORITY
Box 122, Little Ferry *HU-7-1350* New Jersey



U. S. Army Telephones EE-8 fully reconditioned. Suitable for intercommunication between 2 or more points. $35.00 for 2 telephones, including 100 ft. of wire and batteries. Additional wire 1¢ per ft. or $25.00 per mile. Write for free list on telephones. All shipments F.O.B. Simpson, Pa.

TELEPHONE ENGINEERING CO.
Dept. ENR-50 Simpson, Pa.

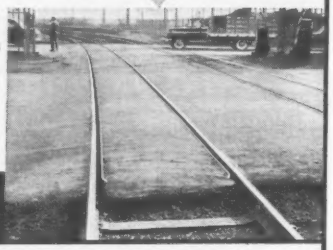


You SAVE ALL WAYS with

"Guardmaster"

RAILWAY FLANGEWAY CROSSING GUARD

- Costs less to install
- Reduces Maintenance Costs
- Makes a smooth paved area over railroad tracks.
- Lasts longer.
- Designed for all Rail Sections New or Used.
- Use with concrete, asphalt or planking.



For literature and new developments write to

KASLE STEEL & ALUMINUM CO.
P. O. Box 536, Detroit 32, Mich. TIffany 6-4200

NEW & USED RAIL—STANDARD & SPECIAL TRACKWORK—
MINING & TUNNEL TRACKWORK—TUNNEL BOXES

USED BARGES

FOR SALE

Open Hopper Type
10 Barges—300'x48'x11'
3 Barges—280'x48'x11'
House Type—Steel Rolling Covers
8 Barges—230'x45'x11'

Address Inquiries to Marine Dept.

FEDERAL BARGE LINES
611 E. Marceau St. St. Louis 11, Mo.
VErnon 2-4000

FOR SALE OR LEASE

LIMA 30-ton WAGON CRANE mounted on self-propelled Lima carrier. New in January, 1960. Equipped with worm driven boom hoist and 15-KW generator.

THE A. S. JOHNSON COMPANY
3311 Jennings Road Cleveland 9, Ohio
Phone SH 1-0214

RAILS-TIES

TRACK ACCESSORIES

PRICED FOR IMMEDIATE SALE

CONSTRUCTION EQUIPMENT IN EXCELLENT CONDITION

Michigan Model 175A Front End Loader 2½ yard bucket—Serial #2839
Tractor & Dozer Caterpillar Model D-9 Serial #19A 797 approx. 2300 hours
Tractor & Dozer Caterpillar Model D-9 Serial #19A 849 approx. 1900 hours
Tractor & Dozer Caterpillar Model D-8 Serial #14A 4529 Like New. Approx. 600 hours
Tractor & Dozer Allis Chalmers Model H.D.-16 Serial #HD16-1071
LeTourneau-Westinghouse Tournapull Model D Serial #60163
Scraper Model DM Serial #S90173
Buffalo-Springfield Kompactor Model K with Cat Diesel Engine Serial #28868
Euclid Loader Model 9-BV with G.M. 6-71 Engine Serial #9BV 155

These machines may be seen and inspected at anytime at our Terminal Avenue, Clark, New Jersey Yard.

VILLA CONTRACTING CO., INC.
233 North Ave. Adams 2-4111 or Fulton 1-8442 Westfield, New Jersey

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These "Searchlight" advertisements

are live opportunities in the engineering field.

Each announcement represents a current Want or Offering of an organization or individual in the field. Some have money-saving possibilities, others are opportunities for more business; many offer equipment—used or surplus new.

"Searchlight" advertisements are constantly changing. New opportunities are constantly finding their way into this great Want medium, each issue. Regular reading of the "Searchlight" pages can be as important to you as reading the editorial sections; Editorial matter is news of the industry; Advertising is NEWS OF OPPORTUNITIES in the industry.

for EVERY business WANT "Think SEARCHLIGHT first"

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

- DROP HAMMERS
- DRIVING CAPS
- HOISTS AND BOILERS
- STEEL LEADS
- PILE DRIVER HOSE
- STEEL SHEET PILING

CONMACO, INC.
DRexel 1-3930
820A KANSAS AVE.,
KANSAS CITY, KANS.

FOR SALE

3—12 H.P. Kamo Vertical Earth Augers

with roller bases and carriage attachment, 12" augers in 2' and 3' lengths with 2¼ hexagon drive. Used one week.

UNDERPINNING & FOUNDATION CO., INC.
155 East 44th Street, New York 17, N. Y.

FOR SALE—CRANE

Model 68 Grove 8 ton Crane with cab. Demonstrator only.

Cleveland Contractors Equipment Co.
10904 Brookpark Road Cleveland 30, Ohio
SHadyside 1-5570

FOR SALE

One 80 ft. Dragline Boom with pendants for model 1201 or 1601 Lima
1—Amsco 3½ c.y. shovel dipper ser. no. 25198 fits Lima 1201 or 1601
1—Esco 3½ c.y. heavy duty dragline bucket
1—Kiesler 3 c.y. clamshell bucket ser. no. 9006715
1—1952 Dodge transit mix truck with 2 c.y. Jaeger mixer
1—Caterpillar D-4 tractor ser. no. 6U7334 with Eimco model 104 loader mounted
2—Euclid R-15 rear dump model 91FD ser. nos. 22965 and 22966
1—Kelco sand blast machine model WP125 ser. no. 1374
1—Plymouth 6 ton 24" gauge locomotive with International UD14 diesel engine and scrubber
1—Size 6SCMC concrete mixer ser. no. 137192
1—Garbro 2 c.y. air operated concrete bucket model GB 5797
1—Garbro 2 c.y. air operated concrete bucket square type
1—Schramm stationary electric driven compressor model 600 ser. no. 8503135
1—Steel shaft form 10 ft. for 14'0" diameter shaft in quarters
2—25 ft. sections of non telescopic steel forms for 7'0" diameter tunnel
1—24'6" section non telescopic steel form for 8'0" diameter tunnel
2—Form travelers for above
1—1 c.y. grout bucket

PRAIRIE CONSTRUCTORS
Pierre, South Dakota
Phone: Capitol 4-5804

CONCRETE PAVING EQUIPMENT

FOR SALE

1—Koehring 34-E Dual Drum Paver, Diesel powered w/ latest accessories.
3350'—17" x 17" x ¼" x 10' Heavy Duty Airport Forms
1—Heltzel 3 compartment Aggregate Bin w/ dual weighing hoppers, 100 Ton
1—Heltzel 300 Bbl. Bulk Cement Plant w/ dual weighing hoppers and w/ 150 Ton Elevator.

W. L. JOHNSON CONSTRUCTION COMPANY AND ASSOCIATES
P. O. Box 6668, Bexley Station
Columbus 9, Ohio Phone: TEmple 3-1327.

(1) **Saginaw Trailer** Serial #B 292399 Gypsum Machine with Moyno Pump. Very Good Condition $4000.00
(1) **Essick Plaster Mixer** with Robbins and Myers Moyno Pump with Wisconsin Motor mounted on 1951-1-½ Ton Chevrolet truck. All Items in good mechanical condition $3000.00

GENERAL ROOFING COMPANY
P.O. Box 271, Washington Pike Bridgeville, Pa.

PIPE

Surplus New & Used
FOR SALE, WANTED OR RENT

Call: HYACINTH 7-4900

PIPE, VALVES & FITTINGS
PILING • CULVERTS
ASBESTOS-CEMENT PIPE • ALUMINUM PIPE
ALBERT PIPE SUPPLY CO., Inc.
103 VARICK AVE., BROOKLYN 37, N.Y.

PIPE
2,000,000 ft. 2" ..... 3.50# to the foot
1,000,000 ft. 3" ..... 7.70#
1,000,000 ft. 4" ..... 10.98#
500,000 ft. 6" ..... 19.80#
200,000 ft. 8⅝" ..... 28#
400,000 ft. 10¾" ..... 35#
75,000 ft. 12¾" ..... 40#
10,000 ft. 16" ..... 42#
All No. 1 Grade Plain End and Cleaned
INDIANA-OHIO PIPE CO.
P. O. Box 5412 Shepard Station, Tel: CL-3-5527
COLUMBUS 19, OHIO

ASSOCIATED PIPE & FITTING CO., INC.
PILING PIPE SHELLS MANDREL FITTINGS | "H" BEARING PILE SLEEVES AND SHOES | K & M ASBESTOS CEMENT PIPE | CULVERTS CIRCLE ARCH SECTIONAL
262 RUTHERFORD BLVD., CLIFTON, N.J. • PR 3-8400

PILING

SURPLUS NEW and USED **For Sale, Wanted or Rent**

H & SHEET STEEL PILING

3700 PCS. BETH. SP6A, 50' 58' & 48' & 40' & 33'
1900 PCS. MP112—12', 25', 35', 40', & 60'
2800 PCS. BETH.—AP3 20', 25', 30', 35', & 60'
2500 PCS. BETH.—DP2—31', 35', 40', 50', 60'
1200 PCS. ZP38-ZP32—25', 36', 50', 60' & 65'
1400 PCS. BP8, BP10, BP12—BP14—55' to 60'
600 PCS. BETH. ZP27—25', 30', 50' & 60'

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO TORONTO—BALTIMORE—JACKSONVILLE MIAMI—RICHMOND—NEW ORLEANS

DIESEL LOCOMOTIVES & CRANES
12—Gen. Elec. 100, 80, 65, 45, 25 & 23 ton
25 Ton New Whitcomb Diesel Elec.
25 Ton Industrial Loco Crane, 60' Boom

20 TON STIFF LEG DERRICK
1—AH&D, 40' Mast. 96' Boom, 16' BW

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephones MU 2-3075 or MU 2-1898

1500—H BEARING PILES

8" 36 lb. 10" 42 lb. 12" 53 lb. 14" 73 lb.
Stocks Buffalo—Baltimore—N. Y., N. Y.
—Jacksonville

R. C. STANHOPE, INC.
Tel. MU 2-3076 or 2-1898
60 E 42nd St. N. Y. 17, N. Y.

We do a Nation-wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT
815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
103 pcs. 60 ft. MZ-27—Tennessee
150 pcs. 60 ft. SP-4—W. Virginia
290 pcs. 60 to 30 ft. M-16 & M-115—Tennessee
370 pcs. 60 to 30 ft. M-115 & M-116—Indiana
150 pcs. 34-30 ft. M-116—Michigan
81 pcs. 25 ft. M-115—Mississippi
220 pcs. 15 ft. M-115—Missouri
Other lengths and sections at various locations.
Storage yards at CHICAGO, BUFFALO & MEMPHIS.
Also 10" x 42# and 12" x 53# BP 60' in stock.

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY PILE HAMMERS & EXTRACTORS
All Sizes—For Rent & Sale—Immediate Shipment

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

SEARCHLIGHT Equipment Locating Service

No Charge or Obligation

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment *not currently advertised.* (This service is for USER-BUYERS only).

How to use: Check the dealer ads to see if what you want is not *currently* advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Section
Locating Service
c/o ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Locating Service
c/o ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N.Y.

Please help us locate the following equipment components.

.....

.....

.....

NAME ..... TITLE .....

COMPANY .....

STREET ..... CITY .....

6/2/60

PROFESSIONAL SERVICES

MIDDLE ATLANTIC

Layne-New York Co., Inc.

Test Borings ● Core Drilling
Grouting ● Drilled Shafts
Water Wells ● Water Treatment
150 Denton Ave., New Hyde Park, N.Y.
431 Market St., Camden, N. J.
1250 W. Elizabeth Ave., Linden, N. J.
15 Ryder St., Arlington, Mass.
5655 Bryant St., Pittsburgh 6, Pa.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations, Express Highways
Administrative Services
Kansas City - Cleveland - New York

E. Lionel Pavlo

Consulting Engineer
Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

Lawrence S. Waterbury

Consulting Engineer
Bowling Green 9-8196
25 Broadway New York 4

Steinman, Boynton, Gronquist & London

Consulting Engineers
HIGHWAYS - BRIDGES - STRUCTURES
117 Liberty St., New York 6, N. Y.

REMEMBER!!

You can depend on these consultants for a fast accurate solution to your problems. Consult them when necessary.

Severud-Elstad-Krueger-Associates

Consulting Engineers
Structural Design - Supervision
Reports - Buildings - Airports
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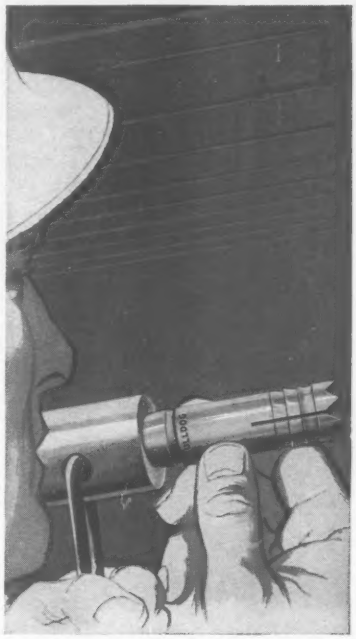

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The Colorado River Decision

It is obvious that the decision on allotment of Colorado River water (ENR May 19, p. 25) will have great impact on two of the fastest growing states in the U.S. As reported, there is "jubilation" in Arizona and "hurt disbelief" in California. But the outlook in California is not as bleak as some of its officials would indicate. And the Arizona picture is not as rosy as it might appear on first impression.

Let's look at the California situation first. Water officials there long have known that southern California will one day need more water than can be provided from local sources, including the Colorado. That fact accounts for the plans to bring Feather River water from northern California—and for plans still further in the future to tap the Eel River.

California water officials have hoped to start deliveries from northern to southern California by about 1970. Colorado River water will be available for coastal area use at least until then and probably for years after. But Californians now will have to work more cohesively to make sure Feather River water comes south by the time it is needed. Even without the solid support of the Metropolitan Water District of Southern California it appears that the $1.75-billion bond issue can have a fair chance of getting the necessary simple-majority vote at next November's election if these cohesive efforts are forthcoming.

The suggestion by MWD that its Colorado River Aqueduct now be operated at full capacity to refill groundwater basins is a constructive one. This can be done for a good number of years—until Arizona uses its promised new water—and will provide a valuable resource that otherwise would be wasted to the sea.

Arizona officials also must work now with decisiveness and cohesiveness. The state's plans for using the contested water have been shelved all too long. It will take a good 10 years to update and complete them, get the necessary financing and build the central Arizona works.

The long delay caused by the water suit resulted in further serious depletion of water resources in the central Arizona area, so the situation there has become more critical. But the delay has its bright side, too. Arizona has grown tremendously in the last decade; its economy has switched to a degree from agricultural to such light manufacturing activities as electronics, for which no large quantities of water are needed. Most important of all, the state now has a tax base that might permit it to finance its project without federal aid even if the cost exceeds a billion dollars—as it almost surely will. This fact could speed the work, whereas financing by congressional appropriations could be a long and uncertain process.

The recommended allotment of Colorado River water is popular in some areas and unpopular in others. It is, however, clear and forthright, and it will permit developments that have been logjammed for years. Arizona now can take long awaited action, and California now knows the course it must follow. That course should not be an obstructionist one. It should be the one that best takes care of California's now clearly defined problems—not one of futilely trying to block or delay Arizona's apparently assured rights.

Educating Civil Engineers

A truly significant conference on scope and content of civil engineering education will be held at the University of Michigan July 6-8. It well might shape the future of the profession.

This will be an open meeting that follows upon two planning conferences in which thirty engineers and educators have participated. These planners will bring to Michigan a proposed program for the teaching of future civil engineers. They will discuss the premises on which their suggested program is based, and they will invite discussion from other educators and noneducators alike. They will be seeking acceptance of their program, of course.

The meeting in July will climax an effort sponsored by The Cooper Union, financed by a $43,000 National Science Foundation grant, and co-sponsored by the American Society of Civil Engineers and the American Society for Engineering Education. National Science Foundation funds will bring one delegate from each of the 138 accredited engineering curricula to hear and discuss results of the planners' two three-day conferences held this spring at Cooper Union's Green Engineering Camp in northern New Jersey.

Details of the planners' proposed program will not be presented until the meeting. But it is safe to say that they have looked with dissatisfaction on many current teaching programs and will come up with some progressive recommendations. It is certain they will recommend a five-year program of civil engineering education to replace present four-year programs; a bachelors degree would be awarded after four years and a civil engineering degree after a year of graduate studies.

Presentation of the planners' proposals in Ann Arbor should have as great an effect on civil engineering teaching as did the Grinter Report in causing a new look at engineering education as a whole some years back. NSF's financial backing assures a representation from most engineering schools at this important meeting. But it is open to all comers. Not alone educators, but all interested in civil engineering education are invited and urged to participate. Prof. Bruce Johnston at the University of Michigan is the man to write for information and registration.